NEW PROFESSIONAL SERVICES OPPORTUNITIES

INPUT

About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs.

Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed in 1974, INPUT has become a leading international planning services firm. Clients include over 100 of the world's largest and most technically advanced companies.

Offices

NORTH AMERICA

Headquarters
1943 Landings Drive
Mountain View, CA
94043
(415) 960-3990
Telex 171407

Detroit
220 East Huron
Suite 209
Ann Arbor, MI 48104
(313) 971-0667

New York
Park 80 Plaza West-1
Saddle Brook, NJ 07662
(201) 368-9471
Telex 134630

Washington, D.C.
11820 Parklawn Drive
Suite 201
Rockville, MD 20852
(301) 231-7350

EUROPE

United Kingdom
INPUT, Ltd.
Airwork House
35 Piccadilly
London, W1V 9PB
England
01-439-8985
Telex 23116

France
La Nacelle
Procedure d'abonnement 1-74
2, rue Campagne Premiere
75014 Paris
France
322.56.46
Telex 220064 X5533

Italy
PGP Sistema SRL
20127 Milano
Via Soperga 36
Italy
Milan 284-2850
Telex 310352

Sweden
Athena Konsult AB
Box 22232
S-104 22 Stockholm
Sweden
08-542025
Telex 17041

ASIA/AUSTRALIA

Japan
ODS Corporation
Shugetsu Building
No. 12-7 Kita Aoyama
3-Chome Minato-ku
Tokyo, 107
Japan
(03) 400-7090
Telex 26487

K.K. Ashisuto
Daini-Suzumaru Bldg., 6th Floor
8-1, Nishi Shimbashi
3-Chome Minato-ku
Tokyo, 105, Japan
(03) 437-0654
Telex 781 26196

Singapore
Cyberware Consultants (PTE) Ltd.
2902 Pangkor
Ardmore Park
Singapore 1025
734-8142

INPUT
Planning Services For Management

NEW PROFESSIONAL SERVICES OPPORTUNITIES

NEW PROFESSIONAL SERVICES OPPORTUNITIES

CONTENTS

		Page
I	INTRODUCTION	1
	A. Objective	1
	B. Scope and Use	1
	C. Methodology	2
	D. Report Organization	3
II	EXECUTIVE SUMMARY	7
	A. Market Projections: Software-Related Professional Services	8
	B. Software-Related Professional Services Characteristics	10
	C. Changing Market Structure	12
	D. Market Impacts	14
	E. Management Strategies for Expanding Professional Services	16
	F. Technical Strategies for Market Positioning	18
III	MARKET ANALYSIS	21
	A. Changing Market Structure	21
	B. Influencing Factors	27
	1. Hardware Technology	27
	2. Personnel	32
	3. Software Technology	34
	4. Communications Technology	36
	C. Range of Potential Relationships	38
	1. Professional Services Providers	38
	2. Professional Services Vendors as Providers of Software-Product-Related Services	41
	a. Implementation Services	41
	b. Shared-Tenant Services	42
	c. Expert Systems	42
	d. Education and Training	43
	3. Professional Services Vendors as Distribution Channels	43
	a. System Integrator	43
	b. Licensing and Marketing Arrangements	46
	c. Software Distribution	46
	4. Professional Services Vendors as Providers of New Software Products	47
	5. Professional Services Vendors in Competition with Software Product Vendors	48
	D. Relationships of Professional Services Vendors, Software Product Vendors, and Hardware Vendors	49

Page

			Page
IV	MARKET FORECAST (1984-1989)		53
	A. Scope and Definition		53
		1. Scope	53
		2. Implementation Services	54
		3. Information Center Services	54
		4. Software Education and Training	55
		5. System Integration	55
		6. Expert Systems	55
	B. Total Market Forecast		56
	C. Professional Services Vendor Forecast		56
		1. Forecast	56
		2. Reconciliation	59
	D. Software Product Vendor Forecast		60
		1. Forecast	60
		2. Reconciliation	60
V	MARKET IMPACTS		63
	A. Impacts on Professional Services Vendors and Software Product Vendors		63
		1. Professional Services Vendors	63
		2. Software Product Vendors	67
	B. Acquisition, Licensing, and Other Arrangements		68
	C. Personnel Requirements		73
	D. Impact on Revenues and Profits		75
	E. Impact on Education and Training		81
		1. End-User Training	81
		2. Corporate Executive Training	81
	F. Impact on Software Technology		82
VI	MARKET STRATEGIES AND OPPORTUNITIES		85
	A. Professional Services Vendors		85
		1. Specialization	85
		2. Software Product Vendor Relationships	86
		3. Distribution Channels	87
		4. Client Companies	88
		5. Software Products	89
		6. Education and Training	90
		7. Program Development Systems (PDS)	91
		8. New Services Skills	92
		9. Expert Systems	93
	B. Software Product Vendors		94
		1. Professional Services	94
		2. Client Groups	95
		3. Vertical-Market Skills	95
		4. Education and Training	96
		5. Expert Systems	96
	C. Computer Hardware Vendors		97
		1. Distribution Channels	98
		2. Vertical-Market Solutions	100

			Page
VII	CONCLUSIONS AND RECOMMENDATIONS		103
	A.	Management	103
	B.	Technical	106
APPENDIX A:	DEFINITIONS		107
APPENDIX B:	FORECAST OF SOFTWARE-RELATED PROFESSIONAL SERVICES, 1984-1989		111
APPENDIX C:	RELATED INPUT REPORTS		113

NEW PROFESSIONAL SERVICES OPPORTUNITIES

EXHIBITS

			Page
I	-1	Interview Profile	4
II	-1	Market Projections: Software-Related Professional Services	9
	-2	Software-Related Professional Services Characteristics	11
	-3	Changing Market Structure	13
	-4	Market Impacts	15
	-5	Management Strategies for Expanding Professional Services	17
	-6	Technical Strategies for Market Positioning	19
III	-1	Professional Services Distribution Channels	22
	-2	Emerging Professional Services Distribution Channels	25
	-3	Emerging IBM Distribution Channels for Small System and Software Products	28
	-4	Professional Services Revenues of Professional Services Vendors and Software Product Vendors	39
	-5	Distribution of Professional Services Revenues	40
	-6	Professional Services Vendors as System Integrators	45
IV	-1	Forecast of Software-Product-Related Professional Services, 1984-1989	57
	-2	Forecast of Professional Services Vendor Software-Related Services	58
	-3	Forecast of Software Product Vendor Software-Related Professional Services	61
V	-1	Importance of Selected Professional Services to Primary Business	64
	-2	Importance of Selected Professional Services in Terms of Revenue Production	65
	-3	Type of Arrangements Used by Vendors	69
	-4	Problem Areas in Working with Other Vendors	70
	-5	Personnel Skills Needed in Offering Professional Services	74
	-6	Gross Profit Margin Targets for Professional Services	76
	-7	Methods for Increasing Profit Margins of Professional Services	78
	-8	Impact on Software Product Profit Margins of Offering Professional Services	79
	-9	Impact of Specialization on Profitability	80

I INTRODUCTION

I INTRODUCTION

A. OBJECTIVE

- INPUT believes that the rapidly changing structure of the computer industry with respect to marketing in distribution channels offers professional services and software product vendors, both individually and jointly, significant new opportunities for offering software-related professional services.

- The purpose of this report is to assist professional services and software product vendors in understanding the changing marketplace and distribution environment so they may better plan corporate strategies for services and product offerings.

B. SCOPE AND USE

- This report considers professional services related to software products as contrasted to professional services facility management and professional services analysis and programming for custom applications.

- Software-related professional services include software product implementation services (analysis and programming in support services for software products including package extension and customization) and professional services for on-site support and education and training.

- Professional services can be delivered by a professional services vendor either directly or through software product vendors. Alternatively, professional services can be delivered by a software product vendor for implementation, support, education, and training.

- Software maintenance is considered part of software product revenues and is not included in the study.

- Planning and marketing executives can use this report to assess company opportunities in offering software-related professional services, to consider cooperative marketing possibilities, to consider acquisition strategies, and to provide input to long-range strategic planning.

C. METHODOLOGY

- The program of research considered the following questions:

  - What is the magnitude of new professional services opportunities?

  - Under what conditions do new opportunities become top priority?

  - How should selective opportunities be marketed?

  - How will cooperative ventures assist and interface with primary corporate efforts?

  - How can professional services (software products) vendors best target their services?

- How can new professional services opportunities increase revenues and profits?

- What are the problems with new professional services opportunities from the professional services vendor viewpoint?

- What are the problems with new professional services opportunities from the software vendor viewpoint?

- INPUT conducted interviews with professional services vendors, software vendors, and hardware manufacturers. The respondent profile provided in Exhibit I-1 shows that interviews were conducted at 40 companies.

- Additional vendor plans and activities were obtained from:

  - Review of trade publications and vendor literature.

  - Discussions with industry experts as well as INPUT staff members.

- Previous INPUT studies were also reviewed and relevant information was extracted. A listing of related INPUT reports is contained in Appendix C.

D. REPORT ORGANIZATION

- The remainder of this report is organized as follows:

  - Chapter II is an executive summary formatted as a presentation for group discussion.

  - Chapter III analyzes the changing market structure, particularly with respect to distribution and marketing channels.

EXHIBIT I-1

INTERVIEW PROFILE

VENDOR TYPE	NUMBER	
	COMPANIES	RESPONDENTS
Professional Services	18	40
Software Products	12	19
Hardware		
– Mainframe	6	10
– Mini/Micro	4	6
Total	40	75

- Chapter IV forecasts the merging professional services opportunities for the period from 1984 to 1989.

- Chapter V forecasts the merging professional services opportunities for the period from 1984 to 1989.

- Chapter VI considers market strategies and opportunities for professional services vendors, software product vendors, and hardware vendors.

- Chapter VII outlines INPUT's recommendations for professional services management and technical personnel.

- The Appendixes contain definitions, the forecast data base, and a list of related INPUT reports.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

- This executive summary is designed in the presentation format in order to :

  - Help the busy reader quickly review key research findings.

  - Provide a ready-to-go executive presentation, complete with the script to facilitate group communication.

- The key points of the entire report are summarized in Exhibits II-1 through II-6. On the left-hand page facing each exhibit is a script explaining its contents.

A. MARKET PROJECTIONS: SOFTWARE-RELATED PROFESSIONAL SERVICES

- The market for software-related professional services is excellent. The market, currently at over $1 billion, will grow by a factor of nearly six during the next five years, exceeding $6 billion in 1989.

- Professional services considered here are related to implementing, extending, and supporting vendor software packages by both professional services and software product vendors.

  - The implementation services market segment exceeds $400 million and is well over one-third of the total market; it will grow significantly but more slowly than the other software-related services.

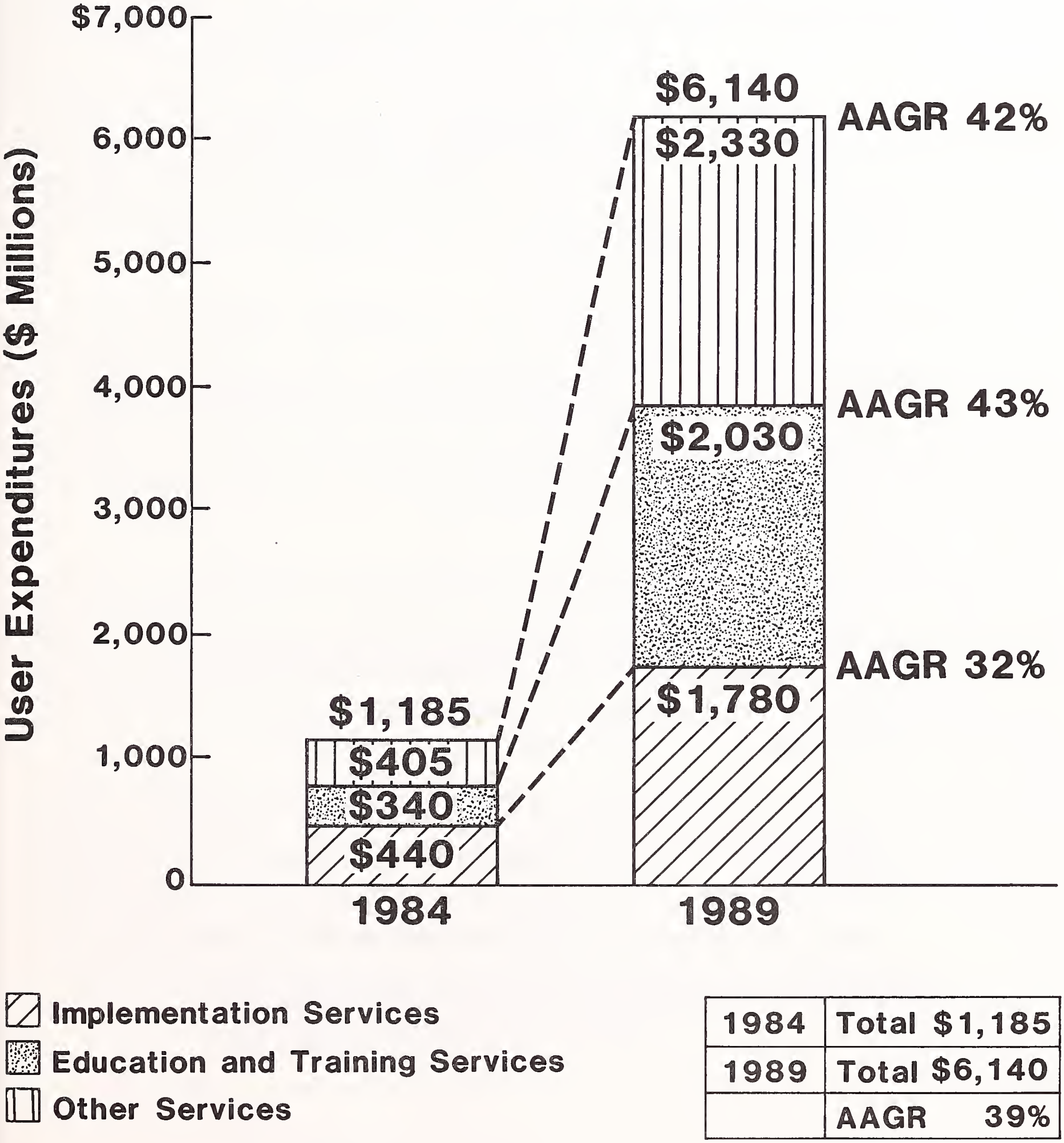
  - End-user demand for education and training will drive that market segment to exceed $2 billion by 1989.

  - Other services (information center, system integration, and expert systems) comprise another third of the market. Their combined growth will result in a market of over $2 billion with a combined average annual growth rate of 42% during the next five years.

- The forecast focuses on professional services delivered by professional services vendors and software product vendors to the commercial sector and to the state and local government sectors. It does not include professional services facility management, consulting, software development, or education and training unrelated to software products. Nor does it include any services to the federal government.

EXHIBIT II-1

MARKET PROJECTIONS: SOFTWARE-RELATED PROFESSIONAL SERVICES



1984	Total $1,185
1989	Total $6,140
	AAGR 39%

B. SOFTWARE-RELATED PROFESSIONAL SERVICES CHARACTERISTICS

- Implementation Services are related to implementing system and application software products. Implementation services cover software product installation, support, and utilization for application development and extension.

- Software Education and Training Services are services for mainframe, mini, and micro system and application software products offered by software and hardware vendors. Services are offered to information systems (IS) personnel. However, services are increasingly focused on end users, including middle management.

- Information Center Services include both software development and consulting related to information center products. The services are frequently offered in arrangements with hardware vendors, communication vendors, and building management corporations. Services are offered as part of corporate information centers, vendor business information centers, and shared-tenant information service centers.

- System Integration Services are primarily software development professional services and may include professional consulting services. The services are related to integrating software products and integrating software products with hardware products and, at times, with communication products. The vendor adopts the role of value-added integrator (VAI).

- Expert Systems Professional Services are software development and consulting services related to utilizing artificial intelligence (AI) program development systems to build expert systems for end users. The services include installation, support, and knowledge-based application development. The services bridge the gap between AI software product vendors and end users.

EXHIBIT II-2

SOFTWARE-RELATED PROFESSIONAL SERVICES CHARACTERISTICS

- **Implementation Services**
  - **Software Products**
  - **Support Users**
- **Education and Training Services**
  - **End Users**
  - **Middle Management**
  - **Microcomputers and Software**
- **Information Center Services**
  - **Corporate Information Centers**
  - **Business Information Centers**
  - **Shared-Tenant Information Centers**
- **System Integration Services**
  - **Vendor as Value-Added Integrator**
- **Expert Systems Services**
  - **Bridging the Gap between AI Product Vendors and End Users**

C. CHANGING MARKET STRUCTURE

- Corporate managers are no longer satisfied with increased computer power and general purpose functionality. Decision makers strongly favor information systems that solve specific business problems.

- With limits on available capital and experienced IS personnel, and under pressure to respond to rapidly changing market conditions, corporate decision makers have shifted to buying (as opposed to building) application software.

- Hardware costs continue to decrease approximately 20% annually, whereas people costs continue to rise relentlessly. Software has become the primary variable in the information system development cost equation.

- The proliferation of personal computers and intelligent terminals throughout corporations has created a spectacular growth in the number of hands-on users. With greater understanding of computer-based solution possibilities, end users are becoming a primary marketing focus.

- The competitive edge has shifted from hardware power and product functionality to expertise in vertical markets and to marketing and distribution. Changing distribution channels require new methods of delivering professional services--methods that include partnering with other vendors.

- In the past two years, hardware vendors--especially IBM--have shifted from internally providing all products and services, to seeking needed market resources outside the company.

- By recognizing and responding to the changing market structure, professional services management can establish strategies to take advantage of the multiple opportunities that are part and parcel of change.

CHANGING MARKET STRUCTURE

- **Solutions Orientation**

- **Buy versus Build Software**

- **Hardware vs. Software in System Cost Equation**

- **Spectacular Growth in Number of Hands-On Users**

- **Shift from Hardware Power and Product Functionality to Vertical Markets Expertise and Distribution**

- **Hardware Vendors Going Outside for Market Resources**

D. MARKET IMPACTS

- The changing market structure impacts delivery of professional services.

  - Professional services vendors are joining software product vendors to implement, extend, and support software products rather than bidding to develop applications on a custom basis for end users. Professional services vendors are also marketing products developed in cooperative arrangements with end users.

  - Software product vendors are using professional services vendors as additional distribution channels and are partnering with other software product vendors to achieve vertical market integration.

  - Computer communication vendors are using both professional services and software product vendors as distribution channels for delivering their products and services on a value-added basis to end users.

- The huge reservoir of end-user demand for education and training services offers opportunity to leverage professional staff expertise for greater revenue and increased profit margins.

- To provide solutions in a timely and cost-effective manner, vendors must use the latest software technology in delivering professional services. This includes:

  - Program development systems to rapidly implement, extend, revise, and transport applications across operating and hardware environments.

  - Authoring systems to leverage education and training through computer-based instruction.

  - AI tools to develop knowledge-based expert systems for end users.

EXHIBIT II-4

MARKET IMPACTS

- Establishing New Relationships
  - Professional Services Vendors
  - Software Product Vendors
  - Computer/Communication Vendors

- Education and Training
  - End Users
  - Corporate Executives

- Software Technology
  - Program Development Systems (PDS)
  - Authoring Systems
  - Expert Systems

E. MANAGEMENT STRATEGIES FOR EXPANDING PROFESSIONAL SERVICES

- Strategic partnering is the best overall strategy to pursue. The strategy includes selectivity in picking partners, a clear market focus, and continued management attention during the entire life of the relationship. Successful partnering leverages critical capabilities of both parties.

- Specialization in market niches and in vertical or cross-industry markets is key to increasing profit margins.

- Professional services should be established as a separate profit center. Vendors should unbundle professional services from software products and charge for each service separately.

- New distribution channels being established by hardware vendors open new opportunities to offer professional services on a leverage basis.

- End-user demand for education and training gives professional services managers the opportunity to expand these offerings, resulting in increased revenue and profit from consultant time.

- Vendors must adopt the following new roles in expanding professional services opportunities in the emerging markets:

  - System integrator for businesses and commercial markets.

  - Providing information center (IC) services--corporate, hardware vendor, and shared-tenant IC services.

  - Facilitator between AI software tool vendors and end users.

EXHIBIT II-5

MANAGEMENT STRATEGIES FOR EXPANDING PROFESSIONAL SERVICES

- Pursue Strategic Partnering
  - Includes Selectivity, Market Focus, Management Attention
  - Leverages Critical Capabilities of Both Parties
- Specialize
- Unbundle Professional Services
- Take Advantage of Hardware Vendor Distribution Channels
- Expand Education and Training Offerings
- Adopt New Roles
  - System Integrator
  - Information Center Services Provider
  - Expert Systems Facilitator

F. TECHNICAL STRATEGIES FOR MARKET POSITIONING

- To increase profit margins, professional services managers must leverage personnel through the use of software productivity aids. Program development systems represent a strategic corporate resource and permit rapid application implementation, extension, revision, and transportability across operating environments and computer hardware.

- It is essential to leverage education and training services through active personnel management and through the use of authoring and video disk systems technology. An effective combination of personnel allocation and computer-aided support will make education and training services a revenue and profit winner.

- High-level skills, such as knowledge of DBMSs and communications, must be tied to specific service offerings to effect increased profit margins. Business skills must be developed and provided to customers, particularly to support vertical-industry markets.

- Professional services managers must actively acquire AI skills through partnering and cross-training with knowledge-based software product vendors. Combining AI skills with industry expertise will lead to success in building expert systems in this emerging market.

EXHIBIT II-6

TECHNICAL STRATEGIES FOR MARKET POSITIONING

- Leverage Professional Services Resources through Program Development Systems

- Leverage Educational and Training Services through Authoring and Video Disk Systems

- Leverage High-Level Skills to Increase Revenues and Profit Margins

- Partner and Cross-Train to Acquire AI Skills to Build Expert Systems

III MARKET ANALYSIS

III MARKET ANALYSIS

A. CHANGING MARKET STRUCTURE

- There is a vast number of distribution channels offering professional services related to software products. Primary and secondary distribution channels for professional services and software product vendors are shown in Exhibit III-1.

- The primary distribution channel for professional services vendors has been to end users, to IS departments, and more recently to corporate information centers. For example:

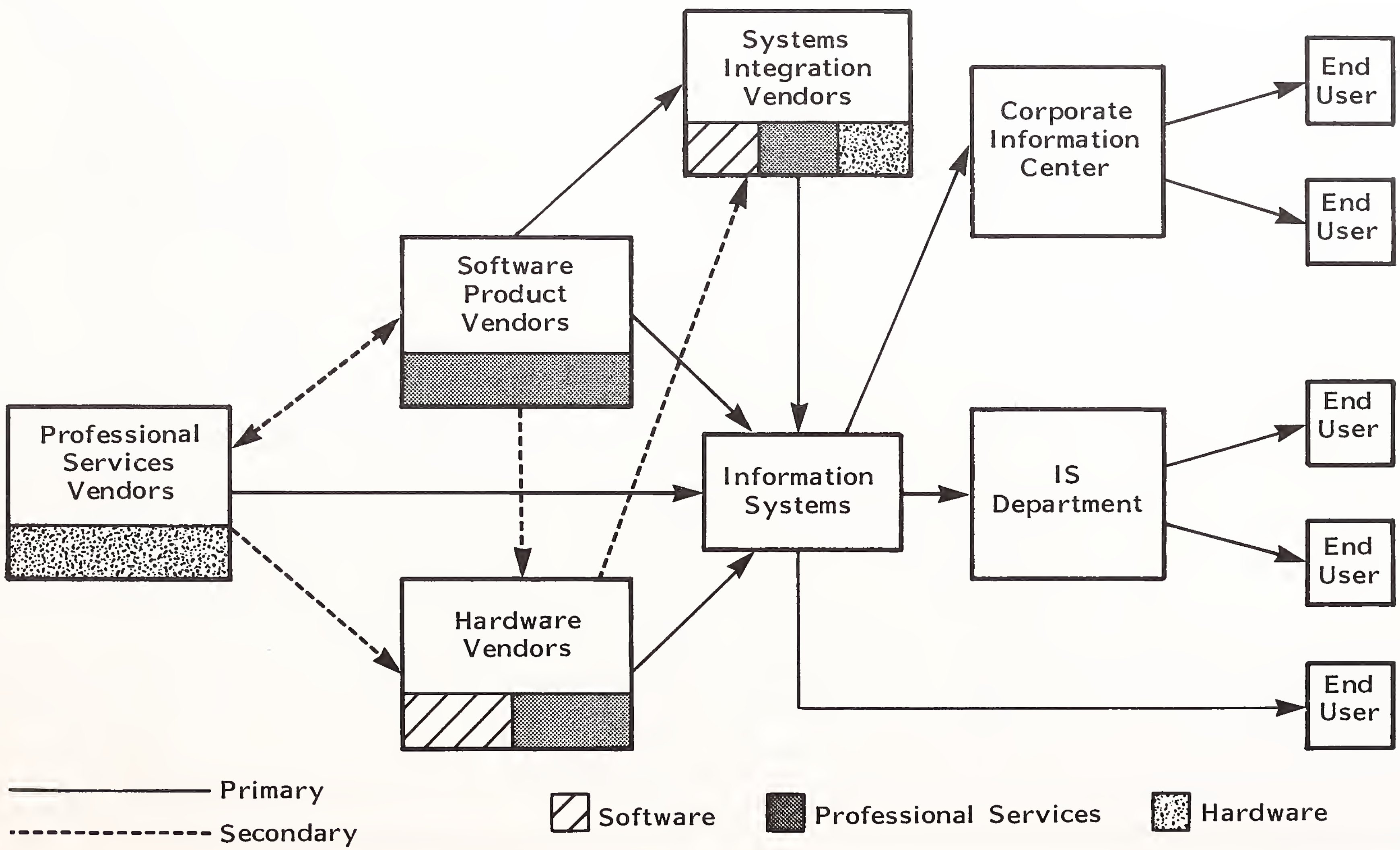
  - Rand Information Systems created Development Center Software under a contract with the IS department of Tenneco Inc. and then entered into an exclusive licensing agreement with Tenneco to market the product nationwide.

  - American Training International provides training to Weyerhauser Corporation end users in both personal computers and application software.

- Secondary distribution channels for professional services vendors are through partnering arrangements with software product vendors and hardware vendors.

EXHIBIT III-1

PROFESSIONAL SERVICES DISTRIBUTION CHANNELS



- Price Waterhouse supports BioService Corporation in implementing, extending, and supporting the Marketing Clinical and Financial Information System (MCFIS) operation's cost/benefit analysis system in hospital and medical centers.

- Program Conversions Inc., in a joint marketing agreement with Prime Computer, provides DBTRAN software and conversion services for converting applications from Datapoint to Prime 50 series minicomputers.

• The primary distribution channel for software product vendors' products and services has been direct sales to end users, IS departments, and corporate information centers.

• Utilizing joint marketing and other secondary distribution channel arrangements with hardware vendors and systems integration vendors, software product vendors find alternate distribution channels for their products and professional services.

  - In a joint marketing agreement with NCR, CONSCO Enterprises Inc. offers financial consolidation, reporting software, and consulting services on NCR distributed processing systems.

  - In a joint marketing agreement with Systems and Computer Technology (SCT), Cincom offers its Manage User Series plus its TIS data base management system product line for integration with ATT-IS voice and data products in the "campus of the future" program.

• Professional services vendors acting as system integrators for hardware vendors are primary channels for distributing professional services integrated with, and in support of, information systems.

- Bolt Beranek and Newman integrates its RS/1 computer-aided analysis tool with DEC computers and specialized analysis software for end users involved with laboratory research and quality assurance.

- Intermetrics integrates third-party software packages with IBM personal computers and Intermetrics's monitoring systems to create low-cost customized industrial productivity management systems.

• A number of factors that will be discussed below in section B are causing a significant shift in professional services distribution channels. INPUT believes that professional services, at least in the private sector, will be increasingly coupled with hardware, telecommunications, and software vendor product offerings. The emerging professional services distribution channels are illustrated in Exhibit III-2.

• The proliferation of personal computers, small business information systems, and intelligent workstations has created a huge demand to supply end users with products, services, training, and support through new distribution channels located near the end user.

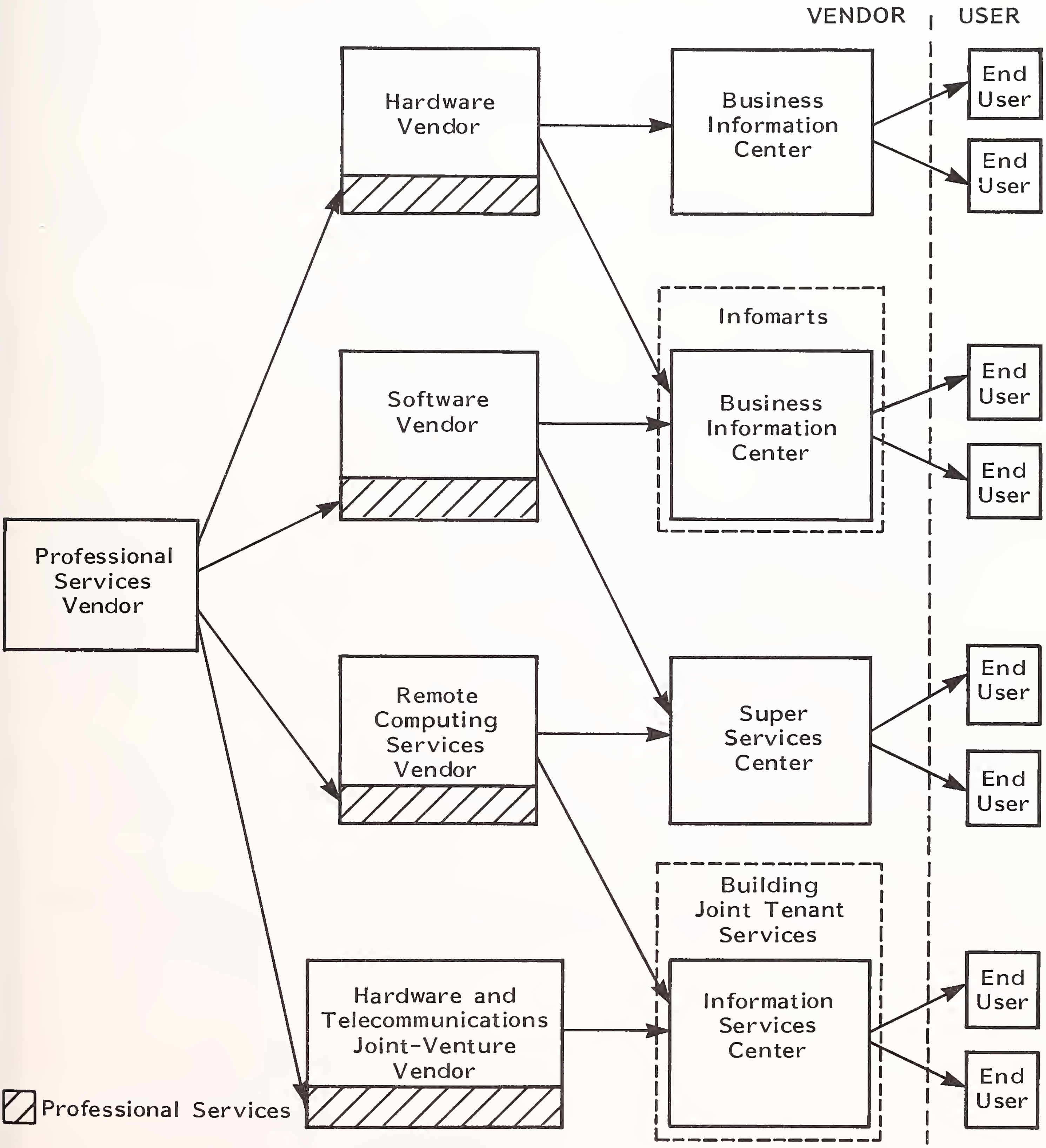
• IBM, DEC, CDC, and other hardware vendors have established business information/product centers to fulfill this need. In addition to providing the hardware vendors' own computers and software, the centers provide third-party software products and professional services through a variety of cooperative marketing and licensing agreements.

  - In a realignment of its Data Business Centers, CDC is focusing on a solution orientation utilizing third-party software and consulting services including small computer-aided design and drafting systems from Holguin and Associates, Inc.

  - IBM has contracted with Applied Computer Consulting (ACC) and Computer Knowledge Corporation to offer training for personal computer users through IBM Product Centers.

EXHIBIT III-2

EMERGING PROFESSIONAL SERVICES DISTRIBUTION CHANNELS



- Infomarts--business centers for computer hardware, software, and professional services vendors--are beginning to appear in major U.S. cities. They offer end users a wide variety of information systems products and services.

  - ComputerMall Associates is establishing Computer Marketplace (CM) showrooms in Philadelphia and Toronto. Arthur Young and Company has acquired an equity position and is planning to offer computer-based accounting and consulting services through the centers.

  - In a joint marketing agreement with NCR, JFM Business Systems will offer NCR Tower systems with JFM's business information systems at the Business Product Center of the Merchandise Mart in Chicago.

- GEISCO is in the process of establishing superservice centers in major cities. The centers will offer "total solutions"--software products, professional services, personal computers, intelligent workstations, and network services--to end users.

- Information Service Centers will offer joint-tenant services in newly constructed buildings. Consultants will wire buildings for voice/data communications and will provide other management services such as environmental, elevator, and security services. Hardware vendors and telecommunication vendors are forming joint ventures that include offering information center services to tenants sharing a building.

  - ATT-IS and United Technologies have announced plans to jointly enter the joint-tenant services marketplace.

  - In strategic agreements with InteCom, MCI, and Wang, GEISCO has announced entry into the shared-tenant services (STS) marketplace.

- Although it is not yet announced, IBM is expected to enter the STS marketplace, either directly or through Satellite Business Systems (SBS)--a Real Estate Communication Corporation (Real Com) subsidiary.

- INPUT believes that the emerging distribution channels offer excellent opportunities for alert vendors offering software products and related professional services on an individual and complementary basis.

B. INFLUENCING FACTORS

1. HARDWARE TECHNOLOGY

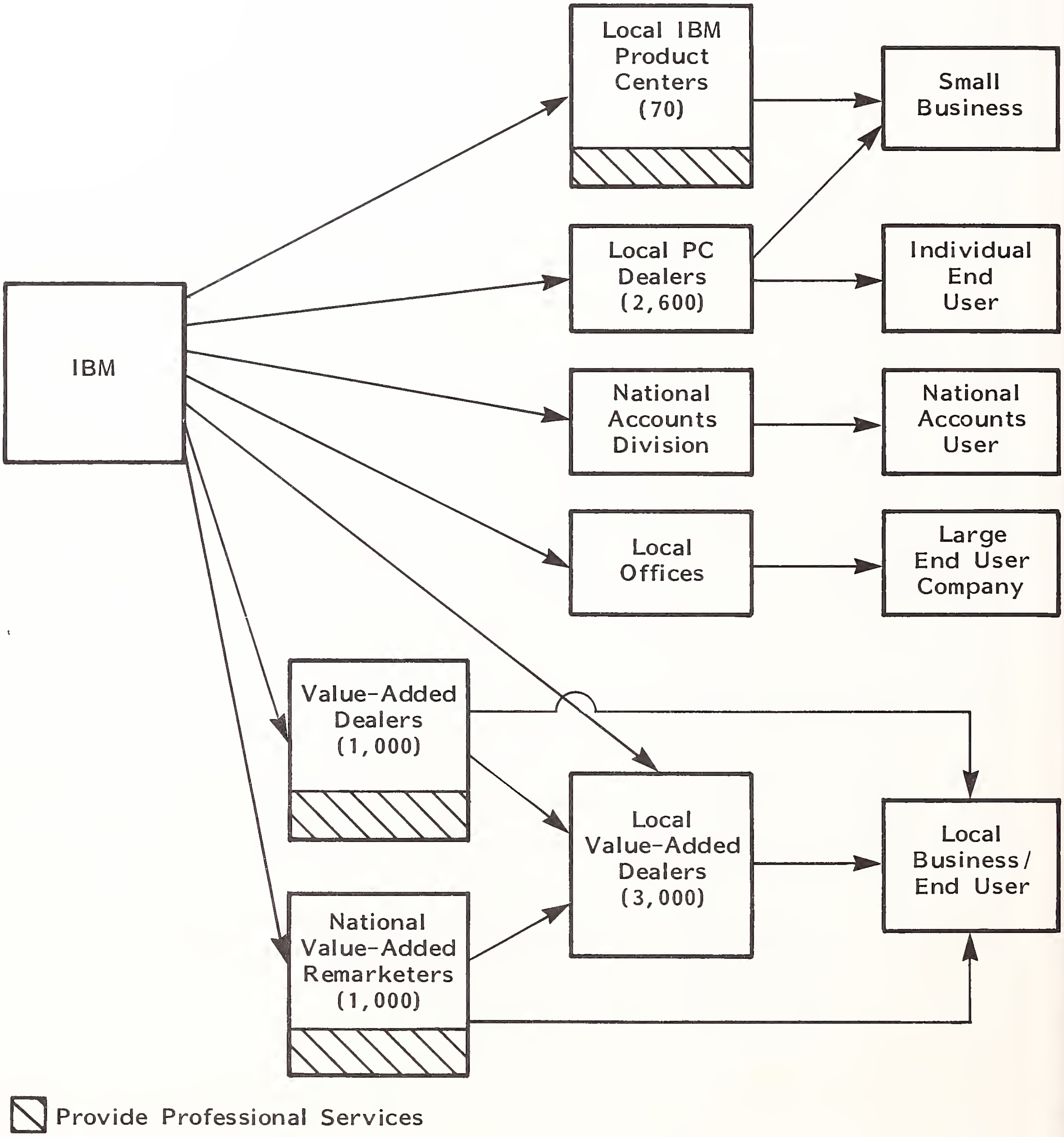
- The continued shift in the delivery of software-related professional services through new distribution channels results from a number of significant factors. Over 70% of the vendors interviewed for this study indicated that the continued decline in hardware cost (approaching 20% annually) is forcing hardware vendors to seek new distribution channels to profitably deliver their products. This is perhaps best illustrated by the emerging IBM distribution channels for small systems and software products, depicted in Exhibit III-3.

- It appears that IBM is shifting the emphasis in its distribution channels. IBM will continue to directly market to Fortune 2000 companies through its National Accounts Division but will expand the support from software products vendors and professional services vendors through cooperative marketing agreements. Examples are:

  - A cooperative marketing agreement with Comshare to offer System W together with professional services to Fortune 2000 corporate information centers.

EXHIBIT III-3

EMERGING IBM DISTRIBUTION CHANNELS FOR SMALL SYSTEM AND SOFTWARE PRODUCTS



- A joint marketing agreement with Artificial Intelligence Corporation to offer Intellect software, including graphics, operating in an IBM-mainframe environment.

- The National Marketing Division, with its network of local and district offices (formerly the mainstay for distribution of IBM products and services), is becoming too costly a distribution channel for all but high-ticket ($300,000 and above) items.

- Of growing importance is the National Distribution Division, distribution channel for a rapidly growing number of products for the small business and individual end user. Through an increasing network of some 70 IBM product centers and more than 2,600 local PC dealers, IBM products (generally priced under $10,000) are distributed to small businesses and individuals, including home users. Even here, IBM is utilizing third-party vendors for the delivery of software-product-related professional services. Examples are:

  - PC Support Centers Limited and Patricia Ritchie Associates, both providing training services at IBM Product Centers.

  - Future Information Systems, an IBM value-added dealer offering video-based training services to companies in New York.

- The greatest expansion in IBM distribution channels is with value-added third-party vendors. For systems ranging from $15,000 to $100,000, IBM is establishing relationships with local value-added dealers (VADs) and national value-added remarketers (VARs). VADs and VARs can be software firms, system houses, and professional services vendors.

- Vendors are becoming increasingly involved in cooperative marketing arrangements with IBM as well as with other hardware manufacturers. The value-added concept is increasingly related to integrating systems for vertical markets, since users are seeking solutions (as opposed to just hardware and software) for select problems.

- Value-added remarketers have the ability to sell and support a vertically targeted product on a national basis. For example:

  - ADP has a value-added remarketer agreement with IBM for the PC and IBM Series I systems for the financial industry. ADP integrates IBM hardware with ADP and third-party vendor software to deliver financial information systems together with implementation and support services to brokerage firms.

  - Computervision has a value-added remarketer agreement with IBM; Computervision integrates the IBM 4300, IBM software, and terminals with its CAE/CAD/CAM hardware and application software into the Computervision Distributed System (CDS) 5000 and offers the system with implementation and professional support services.

- Local value-added dealers integrate IBM hardware and software with their own software and services, delivering vertical solutions to business end users. Local VADs are also becoming a distribution outlet for products and services from VADs in other areas.

  - Dynamic Control Corporation, in an exclusive marketing agreement with IBM, offers its Hospital Primary Care Medical System (HPMS) on the IBM System/38, including installing the software, training client personnel, performing custom modifications, and providing 24-hour remote support.

  - BICC Systems Inc., a Chicago VAD, is in a pilot program under a cooperative marketing agreement with IBM to market, install, and support vertical-market applications from other VADs around the country in select vertical market areas.

- Most other hardware vendors, particularly micro- and minicomputer vendors (including DEC, Data General, and Hewlett-Packard), are utilizing third-party value-added distribution channels to deliver an increasing portion of their hardware and software products. Value-added professional services include implementation, application, extension, remote support, and training.

  - Telematic Products Inc. has a joint marketing agreement with DEC for implementing, customizing, and supporting telephone billing systems to the Bell and General Telephone operating companies utilizing DEC VAX and PDP minicomputers.

  - Technicon Data Systems Corporation, in a joint marketing agreement with Wang, is integrating Wang VS hardware, text processing, and office automation software with its own Matrix medical information system and offering implementation, extension, training, and support services to community hospitals and medical centers.

  - In a joint marketing agreement with Prime Computer, Program Conversions Inc. offers DBTRAN conversion programming and support services for transporting and extending applications from Datapoint to Prime equipment.

  - Harrison and Paulson Inc. (H&P), in a joint marketing agreement with HP, integrates HP 3000 series 37 with H&P's INTERACT interactive document management system and other legal office management software modules, offering implementation, extension, and training services to medium-sized law firms.

  - Perennial Software has a third-party contract with Apple to provide training courses and to act as Apple's agent in software implementation and support, both directly and through retail outlets for the Apple Macintosh product line.

2. PERSONNEL

- The proliferation of personal computers and intelligent workstations throughout corporations has added important dimensions to the marketing and delivery of information systems products and services. End users are getting a better taste of what computers can do for them. They want solutions that IS departments are unable to provide in a timely manner.

- Over 70% of respondents to this survey indicated that company management is looking for user-oriented solutions.

- The majority of respondents (60%) indicated that both IS managers and end users are shifting to utilization of software packages rather than building custom in-house solutions.

- To meet end-user requirements, most professional services and software product vendor respondents (65%) are turning to vertical market integration and specialization.

    - American Management Systems, Inc. has focused its application development expertise utilizing its Foundation program development system in four vertical market: energy, government, education, and financial (including international banking and consumer credit).

    - Auxton Computer Enterprises (AUXCO) has become a specialist in telecommunication billing services. AUXCO has a joint marketing agreement with Southern New England Telephone Company to market billing services to the Bell operating companies (BOCs), holding companies, and independent telephone companies. Billing services for cellular radio telephone are included.

- A significant portion (32%) of respondents believes that having national marketing coverage, either directly or through joint marketing and other

arrangements, is essential to meeting the needs of the rapidly growing end-user base.

- In a continuing plan to establish national presence, Computer Task Group acquired three professional services firms--Diversified Systems Inc., Automated Business Systems Inc., and Data Structure Inc.--in 1983 and Holvick Corporation in early 1984.

- Gerber Alley and Company gained national distribution for its hospital information system software through an exclusive marketing agreement with HP. Gerber Alley will continue to provide implementation, extension, and training services.

- A number of respondents (26%) reported that user management favors vendors offering a full line of software products and professional services. In one dimension users want application products that properly interface with each other, and in another dimension they want applications that integrate the mainframe and the micro. Vendors believe that the "one-stop-shopping" and "total solutions responsibility" best meet user needs. For example:

    - Through a program of acquisition and product integration, Computer Associates is rapidly expanding its product line of mainframe system application software, DBMSs, microcomputer software, and mainframe-to-micro linkage.

    - Applied Data Research is taking the joint marketing route with MSA and other software vendors to create vertical integration in both the application and mainframe-to-micro dimensions.

- Virtually all respondents agree that the rapidly expanding user base is accelerating the demand for education and training services. Most respondents report extensive plans for educational services as well as a current inability to meet user demands for such services.

- Cullinet has established 13 education centers in addition to its national education center in Massachusetts to train application programmers, system programmers, and data base administrators. Cullinet reports having trained more than 30,000 people in 1984.

- Boeing Computer Services (BCS) has extended its course offerings to include more than 200 courses at its six education centers. BCS is offering the Scholar/Teach 3 CBI authoring system on the IBM PC.

● Many respondents (70%) reported that the shortage of DP professionals in user organizations is increasing. Affected by both inflation and recession, many companies are limiting the size of their DP organizations, turning to outside vendors for software products, implementation, and support services. Vendors report that users are requesting increased support in such critical areas as data base administration, data networking in communication, and DBMS design implementation.

3. SOFTWARE TECHNOLOGY

● To better meet the market demand for software packages, vendors have evolved program development systems that permit rapid creation, modularization, customization, and in some instances, transportability of software packages. For example:

- Walker Interactive Products uses its Strategic Software, the "Software Bridge" (SB) and Interactive Systems Customization Facility (ISCF), to transform and customize integrated financial software to mainframes and end-user special requirements.

- Hogan Systems uses its Umbrella program development system to maintain the independence of its financial applications modules from the IBM hardware configuration and to permit modularity, table-driven

programming, report generation, DBMS interface, and interface generation.

- American Management Systems, Inc. uses its Foundation program development system to integrate common modules across vertical markets, to rapidly generate custom applications, and to transport applications across IBM-mainframe environments.

- Through internal development, acquisition, cooperative marketing, and other arrangements, vendors are targeting vertical markets with integrated application products.

  - Cincom has developed a decision support system, the Manage User series, using MANTIS, an application development system. Integrated with an IBM PC-to-mainframe link, the application programs can access Cincom and other DBMSs.

  - Continuing its move toward integrated application software, Cullinet acquired the rights to Information Science's IDMS-based payroll and personnel system. Cullinet will upgrade the system to operate with its relational technology and with its Goldengate mainframe-to-PC link.

- Standardization of microprocessor operating systems (CP/M, M-DOS, UNIX) has permitted the explosive growth in system software products and, more recently, in application software products for personal computers and intelligent workstations. The rapidly evolving microprocessor-based software market affords almost limitless vendor opportunities.

  - Telos Corporation is developing micro-based software products for the Apple Macintosh including Telefile, a word and symbol information storage retrieval system.

- AGS Computers formed Software America to distribute the micro-product-based software lines from two acquisitions, Micro Distributors, and Micro America.

- Expert systems, particularly development tools for building expert systems, are entering the marketplace as hardware and software technology combine to permit cost-effective application of artificial intelligence. Vendor arrangements are exemplified by the following:

  - Knowledge Research Associates has been formed to license expert medical systems developed at medical centers to individual physicians. Initial products are AI/RHEUM (a tool for diagnosing arthritis and rheumatism), CLINFO (a data management system for clinical investigation), and CADUCEUS II (an internal medicine diagnostic system).

  - DEC and General Electric Company invested in the Carnegie Group Inc. to develop tools for AI applications including robotic manufacturing.

  - DEC has agreements with a number of AI software firms to cooperatively market AI software products on VAX and DEC personal computer systems. Three of the vendors are Gold Hill Computers, Digital Research Inc., and Information Sciences Institute.

4. COMMUNICATIONS TECHNOLOGY

- Users demand on-line interactive solutions whether at the micro or intelligent workstation level, the multiuser office system and distributed processing level, or the multiterminal mainframe level. Integration of information processing and communications technology increases the complexity of solutions, requiring additional and higher level vendor skill.

- A variety of yet-to-be-standardized local area networks (LANs)--including those of Datapoint, 3/COM, Wang, and (more recently) of IBM--support primarily vendor-specific PCs and intelligent workstations at the local level. Besides requiring additional and higher level skills, software product and professional services vendors are involved in providing compatibility between multivendor terminals and LANs.

  - SofTech uses the UCSD p-system to provide software portability across a wide variety of personal computers and LANs.

  - InteCom provides both format and protocol conversion for LANs and the terminals through its integrated IBX switching systems.

- Through licensing, cooperative marketing, and other arrangements, hardware vendors such as HP, Wang, DEC, and Data General are providing for supporting other vendor mainframe and terminal equipments in their distributed networks.

  - Data General (DG) made a joint marketing arrangement with Cullinet to market Cullinet's Information Data Base (IDB) software with DG's Comprehensive Electronic Office (CEO), permitting electronic interface between DG's office automation system and IBM data base systems including DL/I and IMS.

  - Wang has made a joint marketing agreement with GEISCO to interface the Wang VS office automation system with GEISCO's network services, including its mainframe-to-IBM-PC network software.

C. RANGE OF POTENTIAL RELATIONSHIPS

- The changing market structure, together with the driving force outlined in sections A and B above, offers a very wide range of potential relationships for providing software-related professional services.

1. PROFESSIONAL SERVICES PROVIDERS

- Both professional services vendors and software product vendors offer professional services. The degree to which they each do so is clearly shown in Exhibit III-4. Two-thirds of the professional services vendors surveyed derive 75% of the total revenues from offering professional services. In contrast, the majority of software product vendors derive no more than 10% of the total revenues from professional services. The data suggests that there is a wide window opportunity for complementary relationships between professional services and software product vendors. INPUT expects the window to become wider as users buy--as opposed to building--vertical applications.

- The focus of professional services is considerably different for professional services vendors and software product vendors, as Exhibit III-5 illustrates.

  - The primary focus of software product vendors is to provide education and training services related to their own software products.

  - Professional services vendors derive under 10% of the total revenues from education and training, primarily for other vendors' products.

  - The explosive growth of users having PCs and intelligent workstations is outpacing the ability of vendors to respond. Relationships between professional services vendors and software product vendors in the education and training function is clearly in order.

EXHIBIT III-4

PROFESSIONAL SERVICES REVENUES OF
PROFESSIONAL SERVICES VENDORS AND SOFTWARE PRODUCT VENDORS

PROFESSIONAL SERVICES PORTION OF TOTAL REVENUES	PROFESSIONAL SERVICES VENDORS SURVEYED	SOFTWARE PRODUCT VENDORS SURVEYED
$<5\%$	-	3
5-10%	-	4
10-20%	-	2
20-40%	-	2
40-75%	6	1
$>75\%$	12	-
Total	18	12

EXHIBIT III-5

DISTRIBUTION OF PROFESSIONAL SERVICES REVENUES

FUNCTION	VENDORS	
	PORTION OF PROFESSIONAL SERVICES VENDOR REVENUES (Percent) (1)	PORTION OF SOFTWARE PRODUCT VENDOR PROFESSIONAL SVCS. REVENUES (Percent) (2)
Education and Training	9%	41%
Consulting	64	31
Professional Services FM	7	0
Other	20	28
Total	100%	100%

(1) Sample Size: 18

(2) Sample Size: 11

- Over a quarter of respondent software product vendors' professional services revenues are derived from other functions including product implementation, customization, and support (on-site and remote). Software product vendors are hard-pressed to supply these other services necessary to support market growth, ranging about 40% annually. The low level (20%) of revenues derived from other professional services by professional services vendors suggests opportunities for leveraging additional revenues through supporting software product vendor growth.

- INPUT concludes that there is a great deal of complementarity between professional services vendors and software product vendors.

2. PROFESSIONAL SERVICES VENDORS AS PROVIDERS OF SOFTWARE-PRODUCT-RELATED SERVICES

a. Implementation Services

- Professional services vendors are forming relationships with software product vendors to implement, extend, and support software products licensed to end users. Professional services vendors are leveraging the services by specializing in selected software vendor product lines.

  - Computer Task Group has a working relationship with Cullinet Software, Inc. to provide implementation and application development services for IDMS users.

  - Systems and Computer Technology (SCT) has an agreement with Cincom to implement Cincom's Manage User software together with TIS, permitting micro-mainframe data base access for SCT's user base.

  - SPL has an agreement with Walker to similarly implement its products.

b. Shared-Tenant Services

- The shared-tenant services concept shifts the corporate information center and its parallel (the computer services' superservice center) into the structure of building management services. This new distribution channel affords professional services vendors opportunities to form new relationships, either with building management groups or with other vendors supporting shared-tenant services.

  - Planning Research Corporation, in a joint venture with MCI and SBS, is offering consulting, information center services, telecommunication services, and training to tenants in its headquarters building.

  - GEISCO intends to implement its superservice center concept in conjunction with its integrated communication services operation (ISCO) shared-tenant services offering.

c. Expert Systems

- Professional services vendors have an excellent opportunity to become the bridge between AI vendors and end users, both in a consulting capacity and in building expert systems with end users utilizing the development tools that are becoming available from AI vendors.

  - The professional services arm of CDC is installing and supporting an expert medical diagnostic system (HELP) in hospitals and medical centers.

  - As part of its orientation to offer solutions, Boeing Computer Services has established an AI center to train BCS staff in AI techniques and to offer expert system consulting services to industry.

d. <u>Education and Training</u>

- A major portion (68%) of professional services and software product vendor respondents cited the critical need for expanded education and training services for their products and those of other vendors. Demand is greatest in providing education and training services to end users for personal computers and intelligent workstations.

  - Applied Data Research (ADR) has established five regional learning centers offering expanded training services to IS departments for ADR's mainframe offerings and to end users for its information center, mainframe-to-micro, and PC-compatible products. ADR is using its ADROIT computer-base training system to train end users in IBM PCs and PC software.

  - American Training International (ATI) offers interactive training programs for PCs and PC software through ComputerLand and in a joint marketing agreement through IBM product centers. In a licensing agreement with Sperry, ATI has developed a customized training program for training new users on Sperry's microcomputer line.

  - Simtec offers training in the use of Lisa computers (Lisa College) in three different tracks—executive, support, and analysis. The training is also applicable to Macintosh computers.

3. PROFESSIONAL SERVICES VENDORS AS DISTRIBUTION CHANNELS

a. <u>System Integrator</u>

- A parallel to the system integration role in military weapon systems is beginning to appear in commercial applications in government and the private sector. With the "make or buy" cost equation shifting to the "buy" side with respect to application solutions, INPUT believes that the role of professional services vendors as system integrators will become increasingly important.

- The role of the professional services vendor as system integrator is best illustrated in Exhibit III-6.

  - For large business systems the professional services vendor will integrate software products (from hardware and/or software vendors), hardware, and sometimes communications with implementation, delivery, and support services to provide a complete system to IS departments or system managers.

  - For small business systems the professional services vendor will adopt the role of a value-added integrator (VAI). VAI vendors will integrate hardware and software, which may come directly or through value-added dealers, with their software products or sometimes through LAN hardware and software. VAIs will deliver and provide implementation and support services directly to end users.

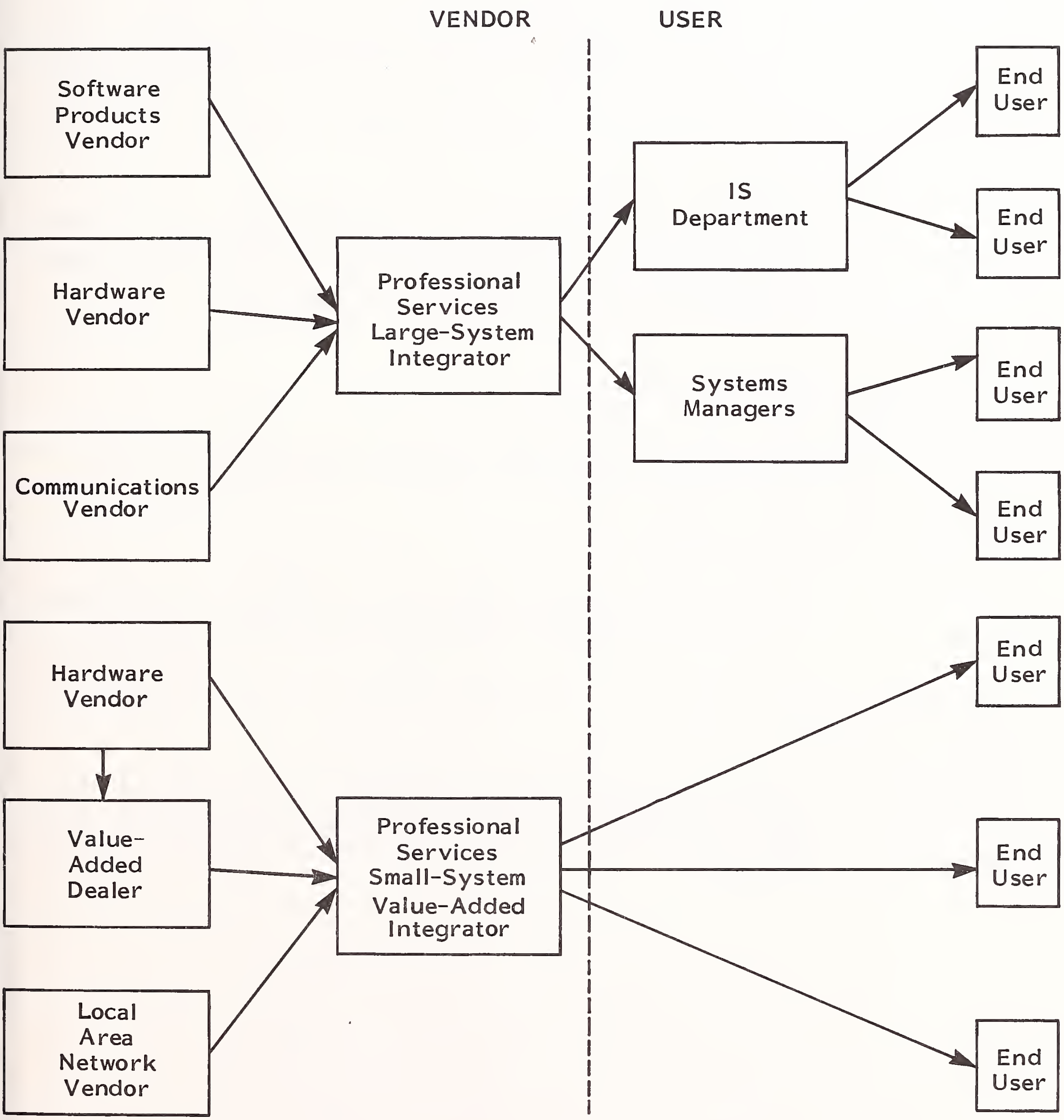
- The following are two examples of professional services vendors acting as system integrators:

  - EDS is integrating Cullinet and other software vendor products with IBM hardware and software, as well as Paradyne and other communication vendor products with professional services, to deliver and support the Navy's Inventory Control Point (ICP) system, the commercial side of naval operations.

  - In the small business system area, IBM sees the emergence of small-system value-added integrators. VAI vendors will combine geographic coverage with specialized solutions from value-added remarketers and value-added dealers with IBM hardware and software products. The solutions include installation and support services. IBM is then offering a national distribution channel for small business application solutions.

EXHIBIT III-6

PROFESSIONAL SERVICES VENDORS AS SYSTEM INTEGRATORS



b. Licensing and Marketing Arrangements

- Additional distribution channels for software products arise as professional services vendors find it increasingly cost-effective to use licensing and marketing arrangements to buy (rather than to build) application solutions.

  - EDS has licensed Hogan Systems financial application software packages, both for its remote processing services for smaller banks and for installation in larger banks under facilities management (FM) arrangements.

  - In a joint marketing agreement with Systems and Computer Technology (SCT), Deloitte Haskins & Sells (DHS) markets SCT software products and trains end users at municipalities in a 13-state western area.

c. Software Distribution

- Professional services vendors are forming a new distribution channel for micro-based software products by coupling sale of micro software packages with support services.

  - Corporate Software, Inc. markets micro software products directly to Fortune 2000 companies. In addition to offering volume discounts and product evaluation, the company offers remote support services and on-site training.

  - MSA has established a micro distribution division to support large corporations in package selection, education and training, consulting, and support.

4. PROFESSIONAL SERVICES VENDORS AS PROVIDERS OF NEW SOFTWARE PRODUCTS

- A major method of obtaining new software products for professional service vendors is through licensing products developed for and with end users. Such products form the base line for product development for a broader marketplace. At times, development of or use of program development systems (PDS) form the basis of new product lines. For example:

  - Walker Interactive products has evolved from a professional services firm to one offering on-line, interactive, financial software products. The products are developed through experience with end users and utilizing a system development methodology called "Strategic Software," a programming development methodology known as the "Software Bridge," and an "Interactive System Customization Facility."

  - Rand Information Systems markets the Comprehensive Freight Information and Payment System (CFIPS), developed in conjunction with TRAVENOL, a medical products and services firm.

  - Cap Gemini-DASD, utilizing its experience in program conversion, has developed and marketed a series of program language translators for IBM and plug-compatible mainframes.

  - Taking advantage of the breakup of AT&T, Auxton Computer Enterprises (AUXCO) is upgrading application products developed for AT&T and the Bell operating companies, providing analysis, accounting, order entry, and billing software products and services to Bell operating companies, holding companies, and independent telephone companies.

5. PROFESSIONAL SERVICES VENDORS IN COMPETITION WITH SOFTWARE PRODUCT VENDORS

- To increase profit margins, leverage expertise, and take advantage of the market trend toward packaged software (particularly for microprocessors), professional services vendors are increasing in numbers and are turning to developing, acquiring, and licensing software products.

- Some professional services vendors have completely shifted their orientation to that of software product vendors. Others have a significant portion (25% or greater) of total revenues related to software product offerings. Professional services vendor undertakings with software products are typified as follows:

  - SofTech has concentrated on microcomputer software products through its subsidiary, SofTech Micro Systems Inc. Over 20% of SofTech's 1983 revenues came from software products, including UCSD p-System, ADA system programs, and Liaison (a LAN software product family).

  - Bolt Beranek and Newman Inc. has formed a subsidiary, BBN Software Products Corporation. The company has raised over $3 million in R&D limited partnership financing to develop an expert system software package called RS/expert.

  - Telos Corporation has formed a subsidiary, Telos Software Products, to concentrate on developing and marketing microcomputer software products. Its initial product, Telofacts, is a marketing analysis system for the Apple II and IBM PC. Telos's recently announced products include Telefile, a leading product for the Apple Macintosh product line.

  - Systems and Computer Technology Corporation (SCT) has reached a point where over 25% of the revenues come from licensing their software products to universities, local governments, and agencies.

- Approximately half of the total revenues from the Continuum Company--a professional services firm specializing in the life insurance and financial services industries--come from licensing its application software products.

- Information Sciences Incorporated, under the guidance of a venture capital firm, has almost completely shifted from functioning as a professional services vendor to deriving well over 60% of its 1983 revenues from software products.

D. RELATIONSHIPS OF PROFESSIONAL SERVICES VENDORS, SOFTWARE PRODUCT VENDORS, AND HARDWARE VENDORS

- Having come full circle in realizing that they cannot begin to effectively provide software solutions in vertical market and cross-industry function applications, let alone system and application development software products from their internal resources, hardware vendors (including IBM) are using a variety of business relationships with professional and software product vendors to distribute products and services to the marketplace.

- INPUT believes that an increasing portion (possibly half within five years) of hardware products will be delivered through the distribution channels outlined in section A above. Distribution of software products and professional services will increasingly complement hardware vendor distribution channels. Examples of the wide variety of vendor relationships are described below.

- Hewlett-Packard has acquired an equity position in Manufacturing and Consulting Services Inc. (MCS). In a cooperative agreement HP will market MCS's CAD/CAM software products for the HP 9000. MCS will be responsible for installation, extension, training, and support.

- In a joint development arrangement between Data General and Walker Interactive Products, Walker and DG integrated Walker's financial application products (comprehensive financial operations) into DG's CEO office automation system. Walker will provide installation, extension, and support services for the financial software modules.

- As part of its aggressive program to encourage third-party vendors to adopt NCR products, NCR has licensed Century Analysis Inc's Officeware, which allows IBM PCs to be used as intelligent workstations with NCR's Tower supermicros. Century Analysis customizes the windowing software for customer selected configurations. NCR has also established three technical support centers dedicated to assisting third-party software vendors in adapting their products to NCR's product line.

- ATT-IS has established a third-party marketing agreement with Softeam Inc. to certify operability and to provide remote end-user implementation and utilization support for some 500 business software packages for the AT&T 6300 PC.

- Control Data Corporation has established a joint venture with Simons, Li, and Associates and Aster Inc. The venture, called the Numerical Prediction Center, will offer modeling and consulting services on the Cyber 205 for water resource planning and weather forecasting.

- As part of Burroughs's application program exchange (APEX), Case System Associates has a joint marketing and customer support agreement with Burroughs to provide purchase guidance as well as training, installation, customization, and consulting support for Case's generalized accounting packages. The APEX program supports third-party vendors in marketing, advertising, demonstration, a remote support mechanism, and hardware discounts.

- In a major shift in 1983 to utilize third-party vendors, Wang established a value-added remarketer (VAR) marketing agreement with Informatics for integration of Informatics's legal software with Wang's office automation system for large law offices. In another arrangement Wang has established an exclusive marketing agreement with Attache Software Inc. for the distribution, licensing, and promotion of Attache Software's series of business/accounting packages for the Wang professional computer.

- DEC is perhaps the leading vendor in making third-party marketing and distribution arrangements. Typical examples are:

  - A cooperative marketing agreement with I.P. Sharp, whereby Sharp will install, train, and support its Process Management and Information System (PROMIS) for the DEC VAX product line.

  - A joint marketing agreement with SLI Technology, Genrad, NCA, and Scientific Calculations for CAE/CAD software, installation support of customized microcircuit engineering design and development on the VAX product line.

  - A joint marketing agreement with Distribution Management System Inc. for computer integrated manufacturing (CIM) software products, installation, and support on the DEC VAX product line.

- As part of Apple's program to increase user support through the dealer network, Apple has established a third-party agreement with Intersol to act as Apple's agent in providing end users with solutions using third-party application software. Apple is market testing the sale of packages that permit end users to buy sets of ten solutions to whatever their problems are, for some 50 application products for the Apple II, and later for the Apple Macintosh product line.

- Through its national distribution division, IBM is rapidly expanding its third-party relationships with software, professional services, and other vendors. INPUT believes that opportunities for cooperative marketing and other arrangements can be extremely attractive as IBM expands new distribution channels for third-party vendor products and services.

    - Libra Programming, Inc. has a value-added remarketing (VAR) agreement with IBM to sell the IBM PC and System/36 together with Libra's specialized accounting software as well as implementation and support to construction, public accounting, and distribution firms, both directly and through other VAR representatives nationwide.

    - Minicom System, Inc. has signed a VAR agreement with IBM to integrate its vertical market software packages for manufacturing, labor union management, and welding equipment and suppliers with the IBM Series/1, expanding sales, installation, and support nationwide.

    - Cadam Inc. has a joint marketing agreement with IBM to design, market, install, and support Cadam software in conjunction with IBM's 5080 graphics terminal and other CAD/CAM product offerings.

IV MARKET FORECAST (1984-1989)

IV MARKET FORECAST (1984-1989)

A. SCOPE AND DEFINITION

1. SCOPE

- The forecast covers professional services related to mainframe, mini, and micro software products.
- The market forecast covers professional services delivered by professional services and software product vendors only.
- The forecast excludes software products and related maintenance services.
- The forecast excludes all hardware-related expenditures.
- The forecast includes user expenditures in the commercial as well as the state and local government sectors.
- The forecast excludes professional services expenditures by the federal government.
- The forecast excludes user expenditures for professional services facility management.

- The forecast includes only that portion of custom software development and consulting that is related to software products.

- The forecast includes expenditures for education and training related to mainframe, mini, and micro system and application software products.

2. IMPLEMENTATION SERVICES

- Implementation services are professional services delivered by professional service and software product vendors related to implementing system and application software products. The services are primarily for software development but may include professional consulting services.

- Implementation services cover software product installation, support, and utilization for application development and extension.

- Implementation services are offered by professional services vendors in support of software product and hardware vendors, or directly by software product vendors.

3. INFORMATION CENTER SERVICES

- Professional services are offered as part of corporate information center, vendor information services centers, and joint-tenant information services centers.

- The professional services offered include both software development and consulting.

- The services are offered by professional services vendors and software vendors directly, but more frequently in arrangements with hardware vendors or by joint ventures.

4. SOFTWARE EDUCATION AND TRAINING

- Software education and training are professional services delivered by software product vendors and professional services vendors, including specialized education vendors.

- The services relate directly to mainframe, mini, and micro system and application software products offered by software and hardware vendors.

- Services offered are to both IS personnel and end users.

5. SYSTEM INTEGRATION

- System integration professional services, as delivered by professional services vendors and software product vendors, are related to integrating software products, integrating software products with hardware, and at times integrating software products with communications products.

- System integration services are primarily software development professional services but may include professional consulting services.

6. EXPERT SYSTEMS

- Expert systems professional services are software development and consulting services related to utilizing artificial intelligence (AI) program development systems to build expert systems either directly or in conjunction with end users.

- Expert systems professional services are delivered by professional services vendors in arrangements with software product vendors, and by software product vendors directly.

- Expert systems professional services include installation, support, and knowledge-based application development.

B. TOTAL MARKET FORECAST

- The market forces at play, as outlined in Chapter III, combine to make highly attractive the market for professional services related to software products. The market, as shown in Exhibit IV-1, will grow sixfold, exceeding $6 billion in 1989, for an average annual growth rate of 39% during the five-year forecast.

- Unfulfilled market demand for software education and training will result in a $2 billion market by 1989 and will represent more than 30% of the total market.

- In an applications market that is rapidly shifting from in-house custom development to purchase of software packages, the implementation services segment will grow at a rate consistent with the growth rate of application software products.

- The complexity of systems and the variety of software, hardware, and communications options will feed the market for system integration.

C. PROFESSIONAL SERVICES VENDOR FORECAST

1. FORECAST

- Opportunities for professional services vendors offering services related to system and application software are, by all measures, excellent. The services will be delivered in a market that will grow more than fivefold, exceeding $3 billion during the forecast period, as shown in Exhibit IV-2.

EXHIBIT IV-1

FORECAST OF SOFTWARE-PRODUCT-RELATED PROFESSIONAL SERVICES

1984-1989

PROFESSIONAL SERVICES MARKET	1983 ($ Millions)	1983-1984 AAGR (Percent)	1984 ($ Millions)	1989 ($ Millions)	1984-1989 AAGR (Percent)
Implementation Services	$330	33%	$440	$1,780	32%
Information Center Services	150	23	185	745	32
Software Education and Training Services	250	36	340	2,030	43
System Integration Services	160	22	195	1,220	44
Expert Systems Services	15	67	25	365	71
Total	$905	31%	$1,185	$6,140	39%

EXHIBIT IV-2

FORECAST OF PROFESSIONAL SERVICES VENDOR
SOFTWARE-RELATED SERVICES

PROFESSIONAL SERVICES MARKET	1983 ($ Millions)	1983-1984 AAGR (Percent)	1984 ($ Millions)	1989 ($ Millions)	1984-1989 AAGR (Percent)
Implementation Services	$200	35%	$270	$1,260	36%
Information Center Services	65	23	80	355	35
Software Education and Training Services	120	38	165	870	39
System Integration Services	50	20	60	345	42
Expert Systems Services	10	50	15	280	80
Total	$445	33%	$590	$3,110	39%

- INPUT expects corporate end users to spend $700 million, or 23% of total expenditures, in 1989 for professional services vendors services delivered through information services centers and hardware vendor supported system integration distribution channels.

- Providing a bridge between artificial intelligence software product vendors and corporate end users, professional services vendors' involvement in expert systems is expected to develop into a market subsector approaching $300 million annually by 1989.

2. RECONCILIATION

- Reconciliation is made with the professional services user expenditure forecast (Exhibit B-11 in INPUT's U.S. Information Services Vertical Markets, 1984-1989).

- Total 1984 user expenditures for professional services net of commercial facility management and federal government are just short of $6 billion. Current user expenditures for the professional services vendor software-related professional services discussed in this chapter (and shown in Exhibit IV-2) are just under 10% of the applicable 1984 market.

  - Software-product-related education and training expenditures of $165 million represent one-third of total nonfederal education and training expenditures.

  - The other four software-related professional services represent but 8% of total user expenditures for software development and consulting services.

D. SOFTWARE PRODUCT VENDOR FORECAST

1. FORECAST

- INPUT forecasts that software product vendors share equally with professional services vendors in offering the five types of software-related professional services. Total related revenues approaching \$600 million, as shown in Exhibit IV-3, will grow fivefold during the forecast period, to exceed \$3 billion by 1989.

- Software product vendors will be hard-pressed to meet the demand for software-product-related education and training. Expenditures in this area will rise to nearly 40% of total user-related expenditures by 1989.

- INPUT expects that software product vendors will shift a part of the implementation services workload to professional services vendors as they (the software product vendors) pursue potentially more profitable opportunities through relationships with hardware and other vendors for system integration services. The system integration market segment will approach 30% of total related expenditures by 1989.

- Information center services--corporate vendor services centers and shared-tenant services centers--will represent a small but still significant market of nearly \$400 million.

2. RECONCILIATION

- Software-product-related professional services are currently just under 10% of total user expenditures for applicable professional services.

  - Software-product-related education and training services are just over 35% of total education and training expenditures.

EXHIBIT IV-3

FORECAST OF SOFTWARE PRODUCT VENDOR SOFTWARE-RELATED PROFESSIONAL SERVICES

PROFESSIONAL SERVICES MARKET	1983 ($ Millions)	1983-1984 AAGR (Percent)	1984 ($ Millions)	1989 ($ Millions)	1984-1989 AAGR (Percent)
Implementation Services	$130	31%	$170	$520	25%
Information Center Services	85	24	105	390	30
Software Education and Training Services	130	35	175	1,160	46
System Integration Services	110	23	135	875	45
Expert Systems Services	5	100	10	85	53
Total	$460	29%	$595	$3,030	38%

- The other four software-related professional services represent less than 8% of total expenditures for software development and consulting professional services in 1984.

V MARKET IMPACTS

V MARKET IMPACTS

A. IMPACTS ON PROFESSIONAL SERVICES VENDORS AND SOFTWARE PRODUCT VENDORS

1. PROFESSIONAL SERVICES VENDORS

- The changing market structure outlined in Chapter III is having a significant impact on the way professional services vendors are approaching the marketplace. IS directors and end users in the commercial marketplace are looking for solutions that can be procured rather than constructed in-house.

- As shown in Exhibit V-1, close association (on site) with the user is still the most important to professional services vendors. Software product implementation services, either directly or through arrangements with software product vendors, rank second.

- It is noteworthy that on-site support services constitute the most important revenue generator for professional services vendors, as shown in Exhibit V-2. Education and training ranked second in importance, emphasizing the importance of sound education and training programs to sales and installation of products.

- Cross-industry and vertical-industry application solutions require a different mix of professional skills, including DBMS, communications, and particularly, specialized industry knowledge (see section C below).

EXHIBIT V-1

IMPORTANCE OF SELECTED PROFESSIONAL SERVICES TO PRIMARY BUSINESS

PROFESSIONAL SERVICES	PROFESSIONAL SERVICES VENDORS*		SOFTWARE PRODUCT VENDORS†	
	IMPORTANCE (1-10)	RANK	IMPORTANCE (1-10)	RANK
Software Product Implementation Services	6.0	2	6.0	3
Software Product Education and Training Services	5.8	3	7.9	1
Software Product Maintenance Services**	5.3	4	7.2	2
Information Center Services	3.3	5	3.3	6
Knowledge-Based Systems Services	3.3	6	4.9	5
On-Site Support Services**	7.6	1	5.9	4

*Sample Size = 18.
†Sample Size = 12.
Rating: 1 = Least Important, 10 = Most Important.

** Not included in market forecast for professional services.

EXHIBIT V-2

IMPORTANCE OF SELECTED PROFESSIONAL SERVICES IN TERMS OF REVENUE PRODUCTION

PROFESSIONAL SERVICES	PROFESSIONAL SERVICES VENDORS RANK	SOFTWARE PRODUCTS VENDORS RANK
Software Products Implementation Services	3	4
Software Product Education and Training Services	2	2
Software Product Maintenance Services	4	1
Information Center Services	6	6
Knowledge-Based System Services	5	5
On-Site Support Services	1	3

- High development costs require professional services vendors to use program development systems (PDS) to improve application development and maintenance productivity (see section E below).

- Changing distribution channels are causing professional services vendors to establish new relationships with software product vendors (see section B below).

- User demand for software products, as contrasted to custom solutions, results in a steady increase in the portion of total revenues that many professional services firms derive from software products.

  - Systems and Computer Technology (SCT) currently derives more than one-quarter of its revenues from licensing software products to educational institutions and local governments.

  - SofTech's microcomputer software products represented over 20% of its total revenues in 1983.

- Demand for vertical market solutions has caused professional services vendors to seek profitability through specialization in selected industries.

  - The Continuum Company has become a specialist in the life and health insurance marketplace. Continuum currently derives 44% of its 1984 revenues from licensing its software products.

  - Taking advantage of deregulation in banking and finance and communication markets, Computer Horizon's over 30% annual revenue growth has resulted from concentrating its professional services in the two marketplaces.

2. SOFTWARE PRODUCT VENDORS

- The changing market structure has equal impact on the delivery of professional services by software product vendors.

- Supporting end-user and IS-director demand for education and training ranks first in importance to software product vendor respondents (as Exhibit V-1 shows). Several respondents report that they are just not able to keep up with end-user demand for training in micro-based software products.

- The revenue from education and training professional services ranks second only to revenue from maintenance services (see Exhibit V-2). Maintenance services are usually bundled with software product licensing.

- User demand for implementation and on-site support services are causing software product vendors either to supply professional services directly or to make cooperative arrangements with professional services vendors.

  - American Software Inc. formed an Application Management Services division to assist customers with installation, custom interface programming, and multiple-site training. The services are provided independent of software license fees.

  - Comshare has formed a professional services division to provide support services, including computer-based training to IBM hardware-based information centers. Professional services now represent over 10% of current revenues.

- The reluctance of software product vendors to provide on-site support services is evident in Exhibit V-1 where respondent software product vendors rank such services low (4th) with respect to their primary business. Many software product vendors focus their attention on national marketing, product sale, and delivery, promoting professional services vendor services for implementation and support. Typical examples are:

- Cullinet's arrangements with Computer Task Group (CTG) for DBMS implementation support.

- The "big eight" accounting firms--including Arthur Andersen and Deloitte, Haskins & Sells--which provide professional services including implementation, support, and training for software vendor products, including those of Walker Interactive Systems Inc. and Systems and Computer Technology (SCT).

- Market demand for both cross-industry and vertical-industry application solutions, mainframe-to-micro-based, requires software product firms to offer single-source solutions, either directly or through cooperative marketing arrangements (see section B).

B. ACQUISITION, LICENSING, AND OTHER ARRANGEMENTS

- Professional services and software product vendors use a wide variety of partnering arrangements to meet market demand for software-related professional services. By far the most popular, as shown in Exhibit V-3, are marketing arrangements negotiated between professional services vendors and software product vendors, and at times between hardware and other vendors.

- The data indicates that software product vendors are more active than professional services vendors in the areas of licensing their products and acquiring companies involved in both software products and professional services.

- As shown in Exhibit V-4, software product vendors (33% of respondents) have problems limiting the licensing arrangements with professional services vendors and particularly with hardware vendors. Vendors are reluctant to give exclusive licensing arrangements, when the software vendor is not involved in at least product implementation, training, and support.

EXHIBIT V-3

TYPE OF ARRANGEMENTS USED BY VENDORS

ARRANGEMENTS	PERCENT OF RESPONDENTS	
	PROFESSIONAL SERVICES VENDORS*	SOFTWARE PRODUCT VENDORS†
Licensing	30%	55%
Joint-Ventures	45	20
Marketing Arrangements	70	90
Acquisitions	25	65
Other	35	35

*Sample Size = 18.
†Sample Size = 12.

EXHIBIT V-4

PROBLEM AREAS IN WORKING WITH OTHER VENDORS

PROBLEM AREAS	PERCENT OF RESPONDENTS	
	PROFESSIONAL SERVICES VENDORS*	SOFTWARE PRODUCT VENDORS†
Proprietary Information	19%	22%
Licensing Arrangements	13	33
Revenues/Profits	-	22
Marketing	25	45
Competition	6	22
Other	50	67

*Sample Size = 9.
†Sample Size = 16.

- A significant portion (45%) of software product vendors cited problems in arranging cooperative marketing agreements with both professional services and hardware vendors. Primary issues involved were those of confidence, technical understanding of the product or application, and professional representation in the marketplace. Cross-training was the most frequently cited solution to vendor concerns.

- Professional services vendors cite problems with conflict of interest as their major concern with respect to making marketing and other arrangements with vendors. The "big eight" accounting firms are concerned about losing their "objectivity." Wide availability of application software product solutions is causing CPA firms to rethink their client/vendor relationships.

- Software product vendors report difficulties in establishing and maintaining teaming and subcontracting relationships with professional services vendors. They cite delivery, skill levels, and product understanding as problem areas. Most relationships have been with small professional services vendors.

- Professional services and software product vendors are actively using the acquisition route to establish national presence and expand services and product offerings.

    - Utilizing a strategy of centralized marketing and corporate support, Sterling Software Inc. is actively acquiring selected software companies, giving them national presence. 1983 acquisitions include Empire Computer Software and Pacesetter Systems, Inc. Current marketing thrust is directed toward banking, application software, systems productivity software, and consulting services.

    - Policy Management System Corporation (PMSC) is establishing national presence in offering software products, professional services, and processing services to the casualty insurance industry through a series

of acquisitions. In 1983 the company acquired Mutual Data Inc. of Boston, and Business Computer Systems Corp. of Dallas. In early 1984 PMSC acquired the data center of Harbor Insurance of Los Angeles.

- Both professional services vendors and software product vendors have licensing arrangements that involve delivery of professional implementation support services. Licensing arrangements are made between professional services vendors and software product vendors, and more frequently between software product vendors and hardware or communication vendors.

  - Electronic Data Systems (EDS) has a nonexclusive licensing and OEM agreement with Cullinet for Cullinet's data base software including IDMS/R and Goldengate, an IBM mainframe-to-micro link. The arrangement covers both EDS services delivered to its clients via telecommunications and EDS clients receiving value-added EDS system management services.

  - Cambridge Interactive Systems has granted an exclusive licensing agreement to Prime Computer for Cambridge's MEDUSA, a three-dimensional CAD software product operating on the Prime Series 50 product line. Cambridge will continue to support MEDUSA through Prime's offices worldwide.

  - Gerber Alley and Company has signed an exclusive licensing agreement with HP for Gerber Alley's Advanced Hospital Information System Software product line. Gerber Alley will support HP in the installation, extension, support, and training for hospital information systems.

  - UNIFY Corporation has licensed its fourth-generation UNIX-based relational data base management system to NCR for the Tower 1632 product line. UNIFY will support OEM system integrators in using UNIFY to develop the third-party application software.

- Marketing agreements, some of which are exclusive, are the primary methods establishing cooperative agreements between professional services, software products, and other vendors.

  - Attache Software Inc. has signed an exclusive marketing agreement with Wang Laboratories Inc. for its business accounting package product line. Wang will be responsible for the licensing, distribution, and promotion of the software products; and Attache will provide implementation, support, and training.

  - In a joint marketing agreement that includes colabeling, Relational Data Base Systems will offer its UNIX-based data base software for ATT-IS computers.

  - Softool Corporation has signed a cooperative marketing agreement with Data General, making Softool's product line of CAD software available on Data General's superminicomputer systems. Installation, extension, and support will be provided by Softool.

  - Logica Incorporated signed a joint marketing agreement with Prime to offer Logica's Rapport, an application development tool. The agreement calls for Prime to do the marketing and Logica to be responsible for sales, implementation, and support.

C. PERSONNEL REQUIREMENTS

- A significantly different mix of personnel skills is required for offering professional services by both professional services vendors and software product vendors. These requirements are reflected in Exhibit V-5. Both types of vendors report that a business application background is a first-priority need in a market driven by a solution orientation.

EXHIBIT V-5

PERSONNEL SKILLS NEEDED IN OFFERING PROFESSIONAL SERVICES

PERSONNEL SKILLS	PERCENT OF RESPONDENTS	
	PROFESSIONAL SERVICES VENDORS*	SOFTWARE PRODUCT VENDORS†
Computer-Based Instruction	24%	45%
DBMS	53	36
Knowledge-Based Systems	18	55
Business Applications	76	82
Communications	71	64
Program Development Systems	36	18
Other	24	35

*Sample Size = 17.
†Sample Size = 11.

- Both vendor types also report an increasing need for personnel with communications skills (primarily data networking), which the vendors report are in very short supply.

- Personnel with DBMS skills are needed by over half the professional services vendors surveyed. These vendors respond to market demand for implementation and support in data base application systems development.

- Timely and cost-effective implementation of end-user solutions require that professional services vendors acquire skills in utilizing program development systems (PDSs). Having developed or utilized PDSs for software product development, software product vendor respondents already have sufficient skills in this area.

- Other personnel skills needed by professional services and software product vendors are knowledge of graphics, fourth-generation languages, UNIX operating systems and mainframe-to-micro linkage.

D. IMPACT ON REVENUES AND PROFITS

- Profits before taxes, as a percentage of revenues for professional services (when not limited by the federal government), generally range from 10% to 20%, as shown in Exhibit V-6.

    - Professional services vendors confirmed that their gross profit margin targets range between 10% and 20%.

    - Software product vendors, however, are targeting higher profit margins for professional services.

EXHIBIT V-6

GROSS PROFIT MARGIN TARGETS FOR PROFESSIONAL SERVICES

GROSS PROFIT MARGIN RANGE	PERCENT OF RESPONDENTS	
	PROFESSIONAL SERVICES VENDORS*	SOFTWARE PRODUCT VENDORS†
< 5%	-	-
5 - 10%	22%	14%
10 - 20%	72	43
20 - 40%	6	43
> 40%	-	-

*Sample Size = 14.
†Sample Size = 7.

- Software product vendors apparently set higher profit margins through a combination of methods shown in Exhibit V-7. The three most important methods they used are increasing training offerings, unbundling, and leveraging their skills across product services.

- The professional services vendors are trying a variety of methods including raising rates and offering higher skill levels at correspondingly higher rates that are likely to meet user resistance.

- Neither professional services vendors or software product vendors believe that professional services have a significant effect on software product profit margins, as shown in Exhibit V-8.

- Many software product vendors surveyed indicated that some level of professional services was needed to promote and support software product sales. Increased demand for training, implementation, and on-site support requires that vendors provide professional services support either directly or through partnering arrangements.

- INPUT believes that market specialization has a greater impact on software product margins than does the offering of professional services. Data taken from INPUT's Information Services Vendor Financial Watch and presented in Exhibit V-9 shows that for publicly held companies the net profit margins are about 50% higher for specialized professional services vendors and software product vendors than for their diversified counterparts.

- INPUT concludes that offering professional services has little negative effect on software product margins and could well be complementary, if carefully managed.

EXHIBIT V-7

METHODS FOR INCREASING PROFIT MARGINS OF PROFESSIONAL SERVICES

METHODS	PERCENT OF RESPONDENTS	
	PROFESSIONAL SERVICES VENDORS*	SOFTWARE PRODUCT VENDORS†
Leverage Skills across Services	21%	40%
Become More Cost Conscious	43	-
Slowly Raise Rates	29	-
Increase Training Services	36	60
Offer Higher Skill Levels	57	20
Specialization	36	-
Unbundling	29	50

*Sample Size = 14.
†Sample Size = 10.

EXHIBIT V-8

IMPACT ON SOFTWARE PRODUCT PROFIT MARGINS OF OFFERING PROFESSIONAL SERVICES

IMPACT ON SOFTWARE PRODUCT MARGINS	PERCENT OF RESPONDENTS	
	PROFESSIONAL SERVICES VENDORS*	SOFTWARE PRODUCT VENDORS†
None (< 5%)	37%	20%
Little (5 - 10%)	27	40
Moderate (10 - 25%)	27	40
Significant (> 25%)	9	0
Total	100%	100%

*Sample Size = 11.
†Sample Size = 5.

EXHIBIT V-9

IMPACT OF SPECIALIZATION ON PROFITABILITY

VENDOR TYPE	NET PROFIT MARGINS (Percent)			
	1982	1983	1984*	1982-1984 AVERAGE
Public Diversified Professional Services Vendors (26)†	3.3%	3.6%	3.7%	3.5%
Public Specialized Professional Services Vendors (5)†	9.1	10.0	10.0	10.0
Public Diversified Software Product Vendors (24)†	6.4	8.5	7.0	7.3
Public Specialized Software Product Vendors (7)†	11.3	11.7	12.7	11.8

*Six Months.

†Number of Vendors.

E. IMPACT ON EDUCATION AND TRAINING

- The personal computer and micro-based workstation has created a rapidly escalating demand for education and training services. Additional demand is being created by corporate executives with solution orientation. Professional services vendors, software product vendors, and specialized training vendors are hard-pressed to meet these demands.

1. END-USER TRAINING

- Comshare Inc. is offering computer-based training, utilizing the IBM PC-XT for information center users.

- Advanced Systems Incorporated (ASI), in a joint marketing agreement with Comserv, is offering Comserv's educational products to the manufacturing industry.

- Arthur Andersen & Co.; Deloitte, Haskins & Sells; and other "big eight" accounting firms are offering training services for selected software vendor products to corporate end users.

- ADR has created a national network of five regional learning centers. ADR is using its ADROIT computer-based training system to provide end users with training and support in the use of personal computers, mainframe-to-micro links, and software products.

2. CORPORATE EXECUTIVE TRAINING

- Performance Resources Inc. is specialized in developing custom-designed computer workshops for corporate managers.

- Simtec Inc. is offering training courses in integrated applications. Courses are targeted at three levels--executive, support, and analyst.

- National Training Systems, Inc. is specialized in offering one-day courses in microcomputers and application products to corporate executive end users.

F. IMPACT ON SOFTWARE TECHNOLOGY

- Professional services vendors and software product vendors have evolved specialized program development systems (PDSs) to rapidly and productively facilitate implementing, customizing, and maintaining application software.

  - McCormack & Dodge uses and markets Millennium to develop IBM-compatible CICS solutions.

  - Hogan Systems uses its Umbrella software to build and tailor its banking system modules to the IBM mainframe operating environments.

  - Cullinet uses its ADS/On-line to develop application-oriented DBMS software.

  - Applied Data Research (ADR) has developed IDEAL, a PDS for implementing applications utilizing ADR's DBMS/data dictionary/data communication product line.

- The demand for computer-based training has spawned development of authoring systems. Professional services and other vendors are using authoring systems to create courseware and to deliver computer-based training (CBT) services to end users.

- Boeing Computer Systems (BCS) uses the Scholar/Teach 3 authoring system for IBM mainframes and IBM PC to create and deliver training courses through the Professional Services and Education Division.

- DEC uses the CAS authoring system operating on the VAX to develop CBT courses for its personal computers and office systems.

- Deltak uses the Gould Systems International's Phoenix authoring system to develop and offer nearly 100 computer-related courses for and running on IBM mainframes and PCs.

- Electronic Data Systems (EDS) uses the IBM IIS authoring system to develop CBT courses for training its systems engineers and for training end users in medical claim processing.

• Artificial intelligence tool kits are now becoming available and permit professional services vendors and other vendors to develop (together with end users) expert systems on a cost-effective basis. Typical examples in the rapidly emerging field are as follows:

  - Carnegie Group Inc. has developed OPS5, an expert system building tool. The system has been used by IBM to develop YES/MVS, an expert system to help operators of large-scale MVS computer systems.

  - Gold Hill Computers Inc. has developed a version of common LISP for the IBM PC. Gold Hill is involved in a joint venture with Symbolics to develop expert financial systems for Shearson/Lehman American Express.

  - Inference Corporation has developed Automated Reasoning Tool (ART), a set of knowledge-based engineering packages.

- Intellicorp has produced KEE, a set of frame-based AI tools for knowledge-based engineering applications.

VI MARKET STRATEGIES AND OPPORTUNITIES

VI MARKET STRATEGIES AND OPPORTUNITIES

- Changing computer industry market structure and distribution channels offers corporate planners a wide range of strategies and opportunities for delivering software-related professional services.

- In a market in which hardware has become a less distinguishable commodity and in which users require software and service solutions, corporate planners must leverage corporate capabilities either directly through internal growth or in relationships with other vendors.

A. PROFESSIONAL SERVICES VENDORS

I. SPECIALIZATION

- Focusing company direction in vertical markets, or even toward a niche in a particular industry, is an effective market strategy. This strategy is particularly effective when industry is in a rapid state of change. Deregulation in the banking and finance and communications industries, and pressure for cost containment in health-care delivery markets, are examples of strategic targets for offering software-related professional services.

  - Computer Horizons, with annual revenue growth exceeding 40% over the past three years, specializes in offering professional services to the communications and financial services industries.

- By specializing solely in services to the communications industry, AUXCO has, in the last three years, increased revenue in excess of 40% annually.

- As previously mentioned, specialization tends to increase profit margins.

2. SOFTWARE PRODUCT VENDOR RELATIONSHIPS

- Acquiring expertise in selected system and application software products in order to offer implementation services—including installation, extension, and support--is another form of specialization strategy for professional services vendors. Professional services vendors can then leverage this expertise through arrangements with the software product vendors and directly with end users.

- The professional services vendor's services are complementary with software product vendor offerings. The professional services vendor benefits from the software product vendor's marketing and distribution channels, whereas the software product vendor benefits from the professional services vendor's consulting and on-site support of end users.

- The following are examples of leveraged relationships between professional services and software product vendors:

  - Computer Task Group, (CTG) offers application development and support services for Cullinet data base products.

  - Systems and Computer Technology offers implementation integration services for Cincom data base and micro-to-mainframe product lines.

3. DISTRIBUTION CHANNELS

- The professional services corporate strategists can look at distribution channels as two-edged swords.

  - On the one hand, the professional services firm leverages its services by becoming a distribution channel for other vendors.

    - EDS has become a distribution channel for Hogan Systems banking software, obtaining commissions for licensing Hogan products in addition to EDS revenues for implementation and support services.

    - In its role as system integrator, Informatics integrates Wang hardware and software with Informatics's legal office information system, offering the product as well as consulting and support services to legal offices.

  - On the other hand, professional services vendors can utilize the distribution channels of other vendors to increase market coverage, to provide complementary services, and to enhance revenues and operating margins.

- A good example is Bank Earnings International (BEI), which has nearly tripled its revenues in two years through a series of piggyback joint ventures.

  - In a joint venture with EDS to market joint studies to banks, BEI contributed its expertise in hands-on banking operations, and EDS contributed its national reputation and marketing clout.

  - In a joint venture with American Banker to develop market reports in the banking industry, BEI contributed the research capability of Electronic Banking Inc., whereas American Banker contributed marketing-based distribution.

- In a joint venture with Darien Micro Systems Inc. (DMS) to market and distribute financial software and professional services, BEI provided its line of software for financial institutions plus professional services and DMS through its parent, Marketing Outlooks Inc., marketing and distributing banking software through its 25-person sales organization.

4. CLIENT COMPANIES

- Professional services vendors can leverage contractual, joint-venture, or research and development efforts with their client companies, including the federal government. These efforts can be subsequently developed into software products and services for the market at large. The professional services vendor may give the client company royalties or an equity position in a subsidiary. The client may even be induced to invest in the venture.

- Price Waterhouse obtained exclusive marketing rights to a medical information system developed in conjunction with Rush Memorial Hospital.

- Auxton Computer Enterprises Inc. developed its product line of telecommunications support software through consulting contracts with AT&T, the Bell Labs, and AT&T operating companies.

- Systems and Computer Technology (SCT) involves its educational and local government users in systems and services development through joint funding under an enhancement license agreement. Participating end users receive the product enhancements, with SCT retaining ownership and exclusive marketing rights.

- As a result of system contracts with the federal and local governments, Syscon has developed software products including PLMX, a software development tool for generating micro code for microprocessors, and the Municipal Information System and Interactive Management (MISIM) information system

for handling the general business information requirements for local governments.

- CACI Inc. is leveraging its contracts with the federal government to produce commercial software products. Two examples are Security II and On-line Security Systems for Honeywell Computers using DDS-4--a data dictionary, directory, and documentation system operating in conjunction with Honeywell's data management for transaction processing software.

- Through research and development contracts, Bolt Beranek and Newman has developed RS/1, a computer-aided analysis tool operating on the DEC product line.

5. SOFTWARE PRODUCTS

- A market strategy that recognizes the reality of corporate user preference to buy rather than to build software for application solutions is shifting professional services corporate direction to compete with software product vendors.

- Over the past three years, some professional services vendors have completely shifted their orientation and are now viewed as primarily software product companies. Typical examples are the Continuum Company and Policy Management Systems (PMS). Management Science of America (MSA) made this shift in the early 1970s.

- Other professional services vendors are using a strategy of leveraging software products with professional services in order to moderate some of the rapid revenue or profit swings associated with software product development and marketing.

    - Information Science Incorporated (InSci) has shifted its revenue mix from 70% professional services and 20% software products in 1980 to

approximately the opposite mix in 1984. Funding for the transition was accomplished through research and development limited partnerships.

- Informatics General Corporation has gradually shifted its product mix so that professional services account for approximately 30% of its revenues in 1984. Informatics continues to focus on software products for vertical markets such as law, distribution, and insurance. Informatics leverages its professional services expertise with its software products.

- SofTech is complementing its professional services with microcomputer software products derived primarily from its government contracts. System software products for microcomputers represented over 20% of SofTech's 1983 revenues.

6. EDUCATION AND TRAINING

- An excellent strategy is to leverage professional staff skills in expanding education and training offerings. Professional services vendors with expertise in systems software--particularly DBMS, application development systems, fourth-generation languages, and microcomputers and micro-based application software--are finding they can easily even out the hills and valleys related to full-time staff utilization by offering training courses to their clients as well as to other vendors' clients.

- Utilization of computer-based training (CBT), through authoring software and video disk presentation systems further leverages professional skills and manpower in developing and implementing education and training courses, seminars, classes, and interactive workshops.

- Arthur Andersen; Deloitte, Haskins & Sells; and other "big eight" accounting firms are leveraging their expertise gained in evaluating the increasing number of system and application software products for client support by

offering (independently and through selected cooperative agreements with software product vendors) software-related education and training services.

- An effective strategy for professional services vendors, including training firms, is to focus microcomputer offerings to corporate end users. Vendors are rapidly discovering that corporate end users buying personal computers have little or no computer experience.

- American Training International (ATI), in addition to producing personal computer and software training disks, conducts training classes for Fortune 2000 end users.

- Deltak Inc., which established Delta Micro Systems, produces micro-based CBT courses for executive and senior managers, information center managers, end user managers, end user professionals, and users.

- Applied Computer Consulting (ACC) and Computer Knowledge Corp. are two professional services firms providing personal computer and computer software training for the IBM PC through IBM's National Marketing Division to Fortune 1000 company end users.

- Electronic Data Systems (EDS) leverages its education and training by utilizing its professional staff to train General Motors personnel and selected client end users in the health care and banking and finance industries.

7. PROGRAM DEVELOPMENT SYSTEMS (PDS)

- Managing cost is an effective strategy for improving professional services profit margins. A major factor in cost determination is professional services programming productivity. Developing or buying a program development system (PDS) that permits timely and efficient application implementation is key to responding to client needs in a timely and cost-effective manner.

- The success of implementing and customizing Walker Interactive Products rests on an in-house PDS called Strategic Software. By separating application functions from computer operation, Walker can migrate software products across vendor hardware through its "Software Bridge." The Interactive System Customization Facility (ISCF) allows Walker to optimize its interactive software to user operating environments.

- American Management Systems has developed an in-house PDS, foundation software. The PDS integrates functional modules across vertical markets, allowing rapid development of custom application. The PDS also interfaces with IBM and other vendor system software, permitting transportability over a wide range of IBM-compatible configurations.

8. NEW SERVICES SKILLS

- Professional services vendors have found that a good strategy to increase revenue is to increase the skill level of professional staff. Client companies that are unable to recruit or retain IS staff with critical skills are turning to professional services vendors to obtain support in DBMS, data base administration, data communications, and on-line interactive distributed systems using relational DBMS.

- Electronic Data Systems (EDS) has established a separate in-house curriculum to train its communication specialists.

- Computer Task Group (CTG) continues to enhance its professional staff skills through its Institute of Technical and Management Training. CTG leverages its internal training through offering the DBMS training courses including IDMS, IDD, ADS/On-line and Culprit to client companies.

- Electronic Data Systems (EDS) spends up to two years to train its systems engineers. A systems engineer spends nine months to one year of that time with a client company, learning its business operations under EDS training supervision.

- Acquisition and internal training are both strategies used to acquire business skills in vertical markets.

- Planning Research Corporation, through its acquisition of Sterling Systems Inc., gained critical skills in the legal market.

- Through its acquisition of Sigma Software Inc., Informatics General Corporation extended its expertise in the life insurance market from providing software products and support services to insurance companies on large IBM mainframes, to providing software products and services for IBM PCs and Wang minicomputers for life insurance agents and brokers.

9. EXPERT SYSTEMS

- By recognizing that hardware and software technology has now made development of expert systems cost-effective, professional services vendors can leverage their expertise in selected vertical markets to take advantage of this rapidly emerging market.

- One strategy is for professional services vendors to form a bridge between AI vendors that lack both sales and vertical-market expertise, and client companies interested in developing knowledge-based systems.

- Another strategy is to develop AI expertise through product development.

  - Bolt Beranek and Newman is developing RS/expert, a statistical advisory software product through $3.2 million in R&D limited partnerships.

  - Planning Research Corporation plans to use the high-technology tax shelter limited partnership route with E.F. Hutton Company to fund expert systems development.

B. SOFTWARE PRODUCT VENDORS

- Marketing increasingly to solution-oriented end users, software product vendors are finding that offering professional services in conjunction with software products is essential to closing sales. Selecting strategies that will complement offering professional services with software products is essential to maintaining high profit margins associated with successful software product offerings.

1. PROFESSIONAL SERVICES

- Software product vendors, particularly those in vertical markets, can offer professional services in a separate division or profit center. Implementation, extension, support, maintenance, and training services can all be separately priced and offered as value added to software products.

- UCCEL Software Products has formed a separate professional services division to offer, among other professional services, operating system conversions for IBM mainframes.

- Comshare has formed a professional services division to provide users of IBM and compatible mainframes with problem solving and information center implementation and support services.

- American Software Inc. has formed Application Management Service Division, offering professional services for implementation, project management, system integration, and training.

- An alternate strategy is to leverage software vendor marketing and distribution skills with implementation and on-site support skills through partnering arrangements with professional services vendors. This strategy offers the added advantage of utilizing the professional services vendor as a distribution channel to the vendor's clients.

- Arthur Andersen; Deloitte, Haskins & Sells; and other "big eight" accounting firms are involved in providing software-related implementation, integration, extension, support, and training services to their clients.

- Both EDS and Computer Task Group provide implementation and support services for Cullinet.

2. CLIENT GROUPS

- Involving clients in application product development is an effective strategy for specialized software product vendors. Client companies can be induced to fund application enhancement, extension, and new product development--all of which involve some use of professional services.

- The Continuum Company involves its users in its Comprehensive User Product Services (CUPS) through sharing the costs of enhancement of existing software and of newly developed software. TCC's Custom Enhancement Services (CES) Division provides specialized extensions to TCC's life insurance and financial software products. Client companies fund research at TCC's R&D subsidiary, Continuum System Research Inc. (CSRI).

- Policy Management Systems, a specialist in the casualty insurance industry, uses a strategy of shared development with its more than 300 clients. A portion of the monthly license fee is allocated for product enhancement and new product development. Guidance and user involvement and support is obtained through a Customer Advisory Board (CAB).

3. VERTICAL-MARKET SKILLS

- Application product vendors need a strategy of acquiring selected business skills in order to adequately penetrate vertical markets. Vendors are finding direct recruitment of competent personnel difficult and expensive. The

strategy of internal training is lengthy and equally expensive. Two effective strategies, when used selectively, are company acquisitions and partnering arrangements.

- Cullinet has been most effective in acquiring vertical-market expertise through acquisition. Its most recent acquisition, Bob White Software, gives Cullinet specialized expertise in the banking and finance sectors.

- Applied Data Research (ADR) has used the partnering strategy through sharing marketing and technology with Management Science of America (MSA).

4. EDUCATION AND TRAINING

- Software product vendors are using the strategy of rapidly expanding their education and training services to meet almost unprecedented demand for training end users in vertical and cross-industry application products, microcomputers and micro-based application products, information center services, and mainframe-to-micro links.

- In 1984, Management Science of America (MSA) offered over 150 courses to more than 40,000 end users in over 230 organizations through its 26 education centers. MSA has established a micro distribution division that offers education and training to Fortune 1000 corporate end users.

- On-line Software International (OSI) is offering professional education and training services in IBM-related data communications methodologies. In 1984, education and training revenue growth exceeded 35%.

5. EXPERT SYSTEMS

- Most software product vendors involved in developing expert systems software are using the strategy of developing AI tool kits. The software products will

then be used by end users (who have expertise in particular areas) to develop the expert system. Professional consulting services are offered on the use of the tool kits. The hope is that once end users know how to use AI tools, expert systems will be developed primarily in-house. Each expert system is, in fact, a custom development task.

- Another strategy, which in INPUT's opinion is more effective, would be for the expert system software vendor to partner with professional services vendors, or professional services parts of other vendors (i.e., RCS or hardware). Expert systems vendors can leverage their AI expertise with professional services vendor marketing, distribution, and vertical-market skills in developing expert systems for corporate users.

- Boeing Computer Services has established an AI center to train BCS staff in selling consulting services to BCS clients.

- DEC has established an AI center in preparation for a major market thrust. In addition to making VAX LISP and OPS5 software commercially available, DEC has signed a number of cooperative marketing agreements with leading AI software vendors, including the Carnegie Group Inc., Digital Research Inc., Gold Hill Computers, Inference Corporation, Prologia, and USC Information and Science Institute.

C. COMPUTER HARDWARE VENDORS

- The past three years have seen significant change in the way that Wang, Data General, IBM, Apple, and other hardware vendors are distributing computer hardware products, software products, and services. Hardware vendors are responding to market demand to provide solutions, particularly to vertical markets as contrasted to general functional data processing systems.

- Hardware vendors are increasingly going outside their organizations to establish relationships with other companies including software, professional services, systems, communications, and other vendors to assist in delivering (and increasingly to directly deliver) hardware and software products.

- No vendor has altered distribution channels in the past three years more than IBM. Establishment of the marketing assistance program (MAP), the complementary marketing organization (CMO), the value-added remarketer (VAR), and the value-added integrator (VAI) are but a few of the ways IBM is establishing cooperative relationships to deliver its products and to provide specific solutions to users.

- Some aspect of software-related professional services is involved in almost all of the value-added delivery of hardware vendor products. INPUT believes that partnering with hardware vendors is a significant strategy for professional services corporate planners.

I. DISTRIBUTION CHANNELS

- IBM estimates that more than half of industry hardware revenues flow from end users through value-added distribution channels. The company projects that by 1989 almost two-thirds will flow through these channels. It is evident that the major market strategy for hardware vendors is establishing relationships with other vendors, including software product and professional services vendors that offer software-related professional services.

- IBM has a VAR agreement with Ozalid Corporation to integrate Ozalid's architectural drafting software with IBM's new graphics terminal, implementing, extending, and supporting the drafting system in architectural and engineering companies.

- IBM established a complementary marketing assistance agreement with BICC Systems Inc. to assist IBM branch offices in marketing, implementing, and

supporting IBM hardware and IBM and other vendor software. BICC will become a regional VAR, and later a VAI under IBM's latest pilot program.

- The liaisons that ATT-IS has made during the past year are legendary. The following are typical partnering situations involving software-related professional services:

  - ATT-IS signed a VAI agreement with Computer Integration Associates for the integration of commercially available software with ATT-IS mini- and microcomputers for installation, extension, and support in medical office management, manufacturing, and general business system markets.

  - ATT-IS is teamed with Softeam Incorporated to certify and support over 500 business educational software products for use on the ATT-IS 6300 personal computer.

- Wang is using GEISCO as a distribution channel for its office automation systems. As part of the joint marketing agreement, Wang and GEISCO will interconnect Wang professional computers with GEISCO worldwide teleprocessing network and Quick-Com electronic mail box service. GEISCO will offer implementation, consulting, and support services to Wang's client base.

- In addition to investing in Scientific Calculations (SC), DEC has formed a cooperative marketing partner agreement with SC. The agreement is intended to help SC expand development of its computer-aided electronics design software. The cooperative marketing agreement calls for SC to install, extend, and support its SCICARDS and MEDS software operating on DEC VAX computers for design of complex printed circuit boards and very large scale integrated (VLSI) circuits.

- NCR partnered with Management Science of America (MSA) to transport MSA business software to the NCR 8500 and 8600 series mainframes. Software installation support and training will be handled by MSA.

2. VERTICAL-MARKET SOLUTIONS

- User demand for vertical-market solutions is increasingly being met by hardware vendor strategies of partnering through licensing and cooperative ventures with other vendors.

- As the hardware and software cost components for computer-based solutions shift toward the software side, hardware vendors can leverage software product vendor and professional services vendor expertise in vertical markets to reduce marketing, distribution, implementation, extension, and support costs, and to increase revenues and profit margins.

- Burroughs Corporation has licensed the Marketing Clinical and Financial Information System (MCFIS), a system for medical procedure cost/benefit analysis from BioService Corporation. Implementation and support services are provided by Price Waterhouse.

- Prime Computer has partnered with McCormack & Dodge to offer A/P Plus, a comprehensive accounts payable information system. McCormack & Dodge will provide implementation, support, and education and training on a worldwide basis.

- In addition to investing in Manufacturing and Consulting Services Inc. (MCS), Hewlett-Packard has formed a development and marketing agreement with MCS to optimize MCS's CAD/CAM software product for the HP 9000 computer family. The two companies cooperatively market the software, and MCS has the additional responsibility of installation, extension, and support.

- DEC has partnered with Computer Graphics Laboratory (CGL) to cooperatively market CGL's Images II, Electronic Graphic Art System. CGL will integrate its software with DEC's PDP-11/73 microcomputer and peripherals. CGL will maintain responsibility for sales, installation, extension, support, and education and training for artists and creative professionals.

- IBM signed a complementary marketing organization agreement with Dynamic Control Corporation (DCC). IBM will market DCC's Hospital Primary Care Medical System (HPMS) nationwide. DCC will provide implementation, training, custom application, and support for the HPMS system operating on the IBM System/38.

VII CONCLUSIONS AND RECOMMENDATIONS

VII CONCLUSIONS AND RECOMMENDATIONS

- The competitive advantage in the computer industry is shifting from hardware and products to expertise in vertical markets and in product and service distribution.

- Even industry leaders such as IBM, ATT-IS, EDS, and ADR are finding that scarce capital, limited management experience, and a lack of technical resources are forcing them to look outside of the organization for new means to meet ever-changing market conditions.

- The strategy of building relationships, at times even with competitors, is the focus of INPUT's management and technical recommendations.

A. MANAGEMENT

- Corporate planners must first assess both corporate capabilities and deficiencies, which may include geographic coverage, industry knowledge, technology, distribution channels, and marketing. Finding partners to supply critical needs requires corporate management to establish market focus, to be highly selective, and to be dedicated to making relationships work. Successful partnering leverages the critical capabilities of both parties.

- Test the viability of the relationship initially with marketing agreements or non-exclusive licensing.

- If the partnering is effective, use joint venturing as the next level of commitment. Joint ventures have the advantage of avoiding involvement with internal corporate bureaucracy and avoiding entanglements.

- Invest in the partner to strengthen successful relationships.

- Use acquisitions and mergers in highly leveraged situations.

- Be an industry leader in at least one area. Specialization in a vertical industry or industry niche or in a functional capability, with national recognition gained directly or through partnering, produces high net profit margins.

- Take advantage of the rapidly emerging hardware vendor distribution channels. Partnering with a strong partner, such as IBM, can increase revenues and profit margins. Partnering with hardware vendors offers additional leverage of national marketing and, increasingly, of national advertising.

  - Recognize, however, that partnering in any one area with a strong partner may have a limited lifetime before the partner tries to take over the market with its own products and services. VAR relationships with IBM in particular should be carefully watched.

  - Bearing this in mind, companies should not "put all their eggs in one basket."

- Adopt the role of system integrator in the commercial market. Establish capability to integrate hardware and software from multiple vendors, delivering systems to various customer sizes depending on market conditions.

- Establish partnering relationships with end users for application development, with the view of later licensing and offering the software products to a specific market.

- Form relationships with hardware vendors, telecommunication vendors, and building management companies to offer services to business information centers, corporate information centers, and joint-tenant information services centers.

- Separate professional services from software product offerings.

- Establish professional services as separate profit centers, separately pricing each service.

- Form relationships to offer professional services through other vendors to their clients.

- Expand professional and services offerings, both directly and through partnering to microcomputer markets including office systems, mainframe-to-micro links and LANs.

- Expand education and training products and services, both directly and through strategic relationships with other vendors for IS personnel and particularly with corporate end users.

- Partner with expert systems vendors that have AI tool kits to develop expert systems for clients in selective vertical markets.

B. TECHNICAL

- Utilize program development systems to improve productivity, flexibility, and transportability of software product development, implementation, extension, and support.

- Target implementation first for IBM and compatible product lines. Leverage product to obtain additional revenues and profits through partnering arrangements to transport the product to other vendor hardware. Recognize, however, that vendors other than IBM may offer better deals to compete with IBM.

- Develop or partner to obtain expertise in authoring and video disk technology to leverage development and extension of education and training products and services.

- Develop or partner to acquire technical capability in utilizing AI tools to develop expert systems.

- Either internally or through partnering cross training, develop new skills—including knowledge of DBMS, data communications, micro-mainframe linkage, and PDS--to upgrade corporate competitiveness.

- Acquire or develop, through cooperative agreements with end users, business skills critical in a solution-oriented marketplace.

APPENDIX A: DEFINITIONS

APPENDIX A: DEFINITIONS

- Terms provided in this Appendix are specific to this report.

- Complementary Marketing Organization (CMO). A vendor that has expertise in a particular industry and the ability to assist the hardware vendor on a nationwide basis to market and/or install the vendor's hardware and software in that industry.

- Expert Systems. An expert or knowledge-based system is an artificial-intelligence-based computer program, built with artificial intelligence software development tools (program language and other knowledge-based engineering software modules), that contains specialized knowledge, both factual and heuristic, supplied by the user. Expert systems simulate human reasoning and are able to draw inferences, make decisions, and reach conclusions.

- Expert Systems Services. Expert systems professional services are software development and consulting services related to utilizing artificial intelligence (AI) program development systems to build expert systems, either directly or in conjunction with end users.

  - Expert systems professional services are delivered by professional services vendors in arrangements with software product vendors, and by software product vendors directly.

- Expert systems professional services include installation, support, and knowledge-based application development.

- Implementation Services. Implementation services are professional services delivered by professional service and software product vendors related to implementing system and application software products. The services are primarily for software development but may include professional consulting services.

    - Implementation services cover software product installation, support, and utilization for application development and extension.

    - Implementation services are offered by professional services vendors in support of software product sales and directly by software product vendors.

- Information Center Services. Professional services offered as part of corporate information centers, vendor information services centers, and joint-tenant information services centers.

    - The professional services offered include both software development and consulting.

    - The services are offered by professional services and software product vendors directly or, more frequently, in arrangements with computer hardware vendors or joint ventures.

- Marketing Assistance Program (MAP). A MAP is an organization selected by the local branch office of a hardware vendor to assist in the sales and/or installation of the vendor hardware and software.

- Software Education and Training. Software education and training are professional services delivered by software product vendors and professional services vendors, including specialized education vendors.

- The services relate directly to mainframe, mini, and micro system and application software products offered by software and hardware vendors.

- Services offered are to both IS personnel and end users.

- System Integration. System integration professional services, as delivered by professional services vendors and software product vendors, are related to integrating software products, integrating software products with hardware, and at times integrating software products with communications products.

  - System integration services are tied to commercial software products.

  - System integration services are primarily software development professional services but may include professional consulting services.

- Value-Added Dealer (VAD). A VAD is a local organization that stocks, sells, and supports a hardware vendor's products, adding value by including other vendor software packages and services.

- Value-Added Integrator (VAI). A VAI is an organization that integrates one vendor's hardware and software with other vendors' hardware and software, adding value through its own products and services, delivering, supporting, and sometimes managing the information system for the customer.

- Value-Added Remarketer (VAR). A VAR is a company that has national presence and that is authorized to sell a hardware vendor's hardware and software products in selective markets, adding value through software products and services.

APPENDIX B: FORECAST OF SOFTWARE-RELATED PROFESSIONAL SERVICES 1984-1989

FORECAST OF SOFTWARE-RELATED PROFESSIONAL SERVICES
1984-1989

PROFESSIONAL SERVICES MARKET	1983 ($ Millions)	1983-1984 AAGR (Percent)	1984 ($ Millions)	1989 ($ Millions)	1984-1989 AAGR (Percent)
Implementation Services					
• Professional Services Vendor	$200	35%	$270	$1,260	36%
• Software Products Vendor	130	30	170	520	25
Subtotal	$330	33%	$440	$1,780	32%
Information Center Services					
• Professional Services Vendor	$ 65	23%	$ 80	$ 355	35%
• Software Products Vendor	85	24	105	390	30
Subtotal	$150	23%	$185	$ 745	32%
Software Education and Training Services					
• Professional Services Vendor	$120	38%	$165	$ 870	39%
• Software Products Vendor	130	35	175	$1,160	46%
Subtotal	$250	36%	$340	$2,030	43%
Systems Integration					
• Professional Services Vendor	$ 50	20%	$ 60	$ 345	42%
• Software Products Vendor	110	23	135	875	45
Subtotal	$160	22%	$195	$1,220	44%
Expert Systems					
• Professional Services Vendor	$ 10	50%	$ 15	$ 280	80%
• Software Products Vendor	5	100	10	85	53
Subtotal	$ 15	67%	$ 25	$ 365	71%
• Total Professional Services Vendor	$445	33%	$590	$3,110	40%
• Total Software Products Vendor	$460	29%	$595	$3,030	38%
Total	$905	31%	$1,185	$6,140	39%

APPENDIX C: RELATED INPUT REPORTS

APPENDIX C: RELATED INPUT REPORTS

- Market Trends in Professional Services.

- Information Services Pricing Trends and Techniques, Volume II: Software Products and Professional Services.

- U.S. Information Services Vertical Markets, 1984-1989.

- U.S. Information Services Cross-Industry Markets, 1984-1989.

- Information Services Vendor Financial Watch (published quarterly).